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ASSEMBLY

OF THE
STATE OF NEW YORK,
ONE HUNDRED AND FIFTEENTH SESSION.

1892.

VOLUME XIII—Nos. 77 AND 78.



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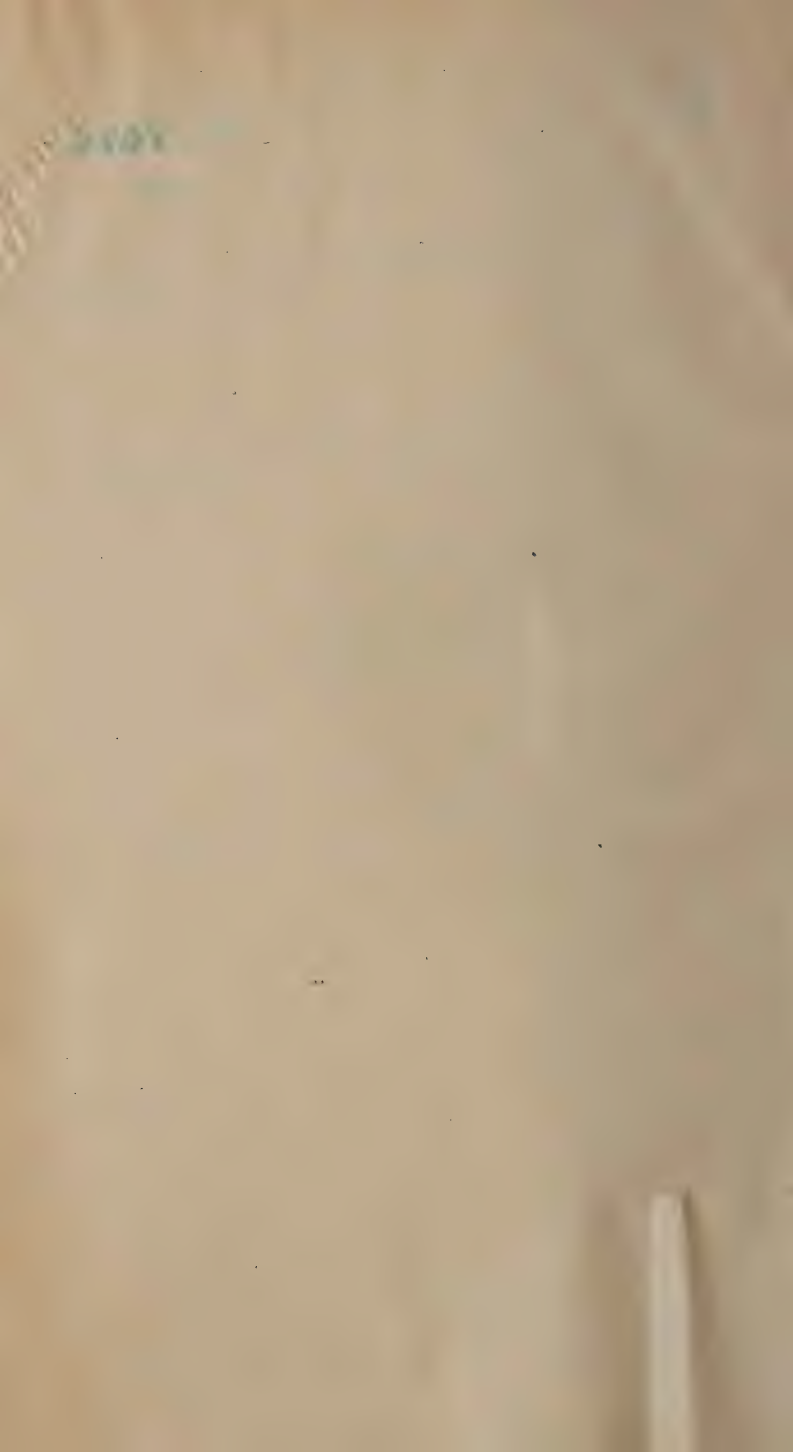
DIRECTORY
OF THE
CHARITABLE, ELEEMOSYNARY, CORRECTIONAL
AND
REFORMATORY INSTITUTIONS
OF THE
STATE OF NEW YORK.

[Prepared by the State Board of Charities.]

TRANSMITTED TO THE LEGISLATURE APRIL 20, 1892.

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JAMES B. LYON, STATE PRINTER.
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STATE OF NEW YORK.

No. 77.

IN ASSEMBLY,

APRIL 20, 1892.

DIRECTORY

OF THE

Charitable, Eleemosynary, Correctional and Reformatory Institutions of the State of New York.

STATE OF NEW YORK:

OFFICE OF THE STATE BOARD OF CHARITIES, }
ALBANY, *April 20, 1892.* }

To the Honorable ROBERT P. BUSH, *Speaker of the Assembly*:

Sir.—By direction of the State Board of Charities, I have the honor herewith to transmit to the Legislature, a Directory of the Charitable, Eleemosynary, Correctional and Reformatory Institutions of the State of New York, prepared by the Board.

Yours, with great respect,

CHARLES S. HOYT,

Secretary.

STATE OF NEW YORK.

MEMBERS AND OFFICERS

OF THE

STATE BOARD OF CHARITIES

1892.

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HON. FRANK RICE, Secretary of State.....	Albany.
HON. FRANK CAMPBELL, Comptroller.....	Albany.
HON. SIMON W. ROSENDALE, Attorney-General.....	Albany.

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<i>First Judicial District...</i>	WM. R. STEWART, 54 William street, New York.
<i>New York County.....</i>	SAMUEL ALEXANDER, 95 Park ave., New York. (Under chapter 571, Laws of 1873.)
<i>New York County.....</i>	MRS. BEEKMAN DE PEYSTER, 465 West Twenty-third street, New York. (Under chapter 571, Laws of 1873.)
<i>Second Judicial District..</i>	SARAH M. CARPENTER, Poughkeepsie.
<i>Kings County.....</i>	CARLL H. DE SILVER, 43 Pierrepont street, Brooklyn. (Under chapter 571, Laws of 1873.)
<i>Third Judicial District..</i>	JOHN H. VAN ANTWERP, 2 Lodge st., Albany.
<i>Fourth Judicial District..</i>	EDWARD W. FOSTER, Potsdam, St. Lawrence county.
<i>Fifth Judicial District...</i>	ROBERT MCCARTHY, Syracuse.
<i>Sixth Judicial District...</i>	PETER WALRATH, Chittenango, Madison county.
<i>Seventh Judicial District,</i>	OSCAR CRAIG, Rochester.
<i>Eighth Judicial District,</i>	WILLIAM P. LETCHWORTH, Buffalo.

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JOHN H. VAN ANTWERP.....	<i>Vice-President.</i>
CHARLES S. HOYT.....	<i>Secretary.</i>
JAMES O. FANNING.....	<i>Assistant Secretary.</i>

Office of the Board: CAPITOL, ALBANY.

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DIRECTORY

OF THE

Charitable, Eleemosynary, Correctional and Reformatory Institutions of the State of New York.

[Arranged alphabetically by town or city in each class and division; also alphabetically by town or city on inclosed table.]

C L A S S . I .

Objects and Methods of the Charity Organization Society of the City of New York, and of all other Charity Organizations in the State of New York.

ALBANY — ALBANY COUNTY.—Charity Organization Society of the City of Albany. In course of incorporation ————. Organized in 1890. Office corner of Broadway and State street.—To be a center of inter-communication between the various churches and charitable agencies and individuals in the city; to foster harmonious co-operation between them, and to check the evils of duplication of relief; to investigate thoroughly the cases of all applicants for relief which are referred to the Society for inquiry, and to send the persons having a legitimate interest in such cases full reports of the results of investigation; the maintenance of a body of friendly visitors to the poor; to obtain from the proper charities and charitable individuals suitable and adequate relief for deserving cases; to procure employment for poor persons who are capable of being wholly or partially self-supporting; the prevention of imposition and the diminution of vagrancy

ALBANY — (Continued).

and pauperism; to promote the general welfare of the poor by social and sanitary reforms, and by the inculcation of habits of providence and self-dependence. Controlled by a board of managers. Supported by membership fees and subscriptions. Dean Sage, president; John Moir, secretary; Geo. Douglass Miller, treasurer. Apply to the secretary.

BINGHAMTON — BROOME COUNTY.—Binghamton Bureau of Associated Charities. Organized 1885, but not yet incorporated. No. 96 Chenango street.—Composed of members representing as far as possible the different religious bodies and charitable organizations at present working among the destitute in the city of Binghamton, whose aim is:

1. To see that all deserving cases of destitution are properly relieved.

2. To record the names of all those relieved by the various charitable and religious organizations, or by private gifts, in a book kept for that purpose, which book shall be kept by the secretary, and information given only to those authorized by this society to receive it.

3. To make employment the basis of relief, and to inculcate habits of self-dependence, self-respect and industry.

4. To prevent indiscriminate and duplicate giving.

5. To secure the community from imposture.

6. To reduce vagrancy and pauperism, by ascertaining their cause, and removing it, when possible.

For further information apply to Mrs. J. H. Barnes, secretary, at above address.

BROOKLYN — KINGS COUNTY.—Brooklyn Bureau of Charities. Incorporated May 1887, under the general statute. Founded in 1879. The central office is at No. 69 Schermerhorn street. Open every day of the year from 8 a. m. to 10 p. m.; Sundays and holidays, from 7 p. m. to 10 p. m. Branch offices, No. 50 South Eighth street; 1658 and 1660 Fulton street; 80 Pacific street

BROOKLYN — (Continued).

and 78 Schermerhorn street. Unsectarian. — For the general purpose of promoting the welfare of the poor, the suffering and the friendless in the city of Brooklyn, by the promotion of cordial co-operation between benevolent societies, churches and individuals; the maintenance of a body of friendly visitors to the poor; the encouragement of thrift, self-dependence and industry; the provision of temporary employment and industrial instruction; the collection and diffusion of knowledge on all subjects connected with the relief of the poor, and the maintenance of a free library of information on these subjects; the prevention of imposition and the diminution of vagrancy and pauperism. The work agencies of the bureau, including the wood-yard, laundries and work-rooms, furnish annually about 26,000 days employment to applicants for relief. The bureau also maintains a lodging-house for homeless women and their infants, where payment for lodging and meals is made when possible by work done; the night office, where homeless men receive shelter in return for work done at the wood-yard; and the day nursery, opened in 1877, at 69 Schermerhorn street, for the children, under 7 years of age, of women who are obliged to go out to work. Controlled by a board of twenty-four trustees. Supported by voluntary contributions. Alfred T. White, president, 40 Remsen street; Hon. D. R. James, 226 Gates avenue, and S. B. Crittenden, 212 Columbia Heights, vice-presidents; I. H. Cary, secretary, 86 Remsen street; —————, general secretary, 69 Schermerhorn street, to whom apply, or to the agents at the branch offices.

BUFFALO — ERIE COUNTY.—Charity Organization Society of Buffalo. Incorporated December 30, 1879, under the general statute. Certificate was given May 25, 1881, increasing number of trustees from nine to fifteen. Organized in 1877. An act was passed April fifteenth—chapter 112, Laws of 1881—to permit the Charity Organization Society of Buffalo to receive trust from Benjamin Fitch,

BUFFALO — (Continued).

founder of the Creche in that city, other property, and authorizing the uses and trusts upon which such property may be conveyed. The society owns the Fitch Institute, and the central office is in Nos. 1 and 2 of the institute, 165 Swan street; district No. 1, office Fitch Institute, corner Michigan and Swan streets; district No. 2 and Out-door Department office, 10 Court street; district No. 3, office 581 Niagara street.—The objects of the society, as stated in its certificate of incorporation, may be more particularly specified as follows:

1. To bring into harmonious co-operation with each other and with the overseers of the poor, the various churches, charitable agencies and individuals in the city, and thus, among other things, to check the evils of the overlapping of relief.

2. To investigate thoroughly, and without charge, the cases of all applicants to the overseer of the poor for official relief, and of all other applicants for charity which are referred to the society for inquiry, and to send the persons having a legitimate interest in such cases full reports of the results of investigation.

3. To obtain from the proper charities and from charitable individuals suitable and adequate relief for deserving cases, to provide visitors who shall personally attend cases needing counsel and help, and to procure work for poor persons who are capable of being wholly or partially self-supporting.

4. To assist from its own funds, as far as possible in the form of loans, all suitable cases for which adequate assistance can not be obtained from other sources.

5. To repress mendicity by the above means and by the prosecution of impostors.

6. To promote the general welfare of the poor by social and sanitary reforms, and by the inculcation of habits of providence and self-dependence, and to these ends to establish and maintain, in whole or in part, the following provident institutions, viz.: One or more creches, some practical means of

BUFFALO — (Continued).

encouraging the saving of small sums of money by the poor, one or more provident dispensaries, which may include arrangements for the temporary treatment of persons injured in the neighborhood and unable to be carried to the general hospitals, and such other provident institutions as shall tend to the physical, moral or intellectual improvement of the poor, and as shall be within the corporate powers of the society.

The following departments of the society, each controlled by a committee appointed by the central council, are in active work in the institute, viz.:

Fitch Creche (opened in 1880), 159 Swan street.—A day nursery for children under 5 years of age of mothers who are bread-winners. (See class III, division 4.)

Fitch Accident Hospital (opened in 1887), room 14.—For temporary care and treatment of persons injured. (See class VII, division 1.)

Fitch Provident Dispensary (opened in 1885), room 6.—For the medical and surgical care of the worthy poor of Buffalo. Office hour, 4 p. m. (See class VII, division 6.)

Fitch Training School, attached to the Fitch Creche.—For domestics, nursery maids' department, 159 Swan street. (See class III, division 2.)

Fitch Provident Wood-yard and Labor Bureau, office, room 1.—Yard, corner South Division and Grosvenor streets. (See class III, division 2).

Controlled by a board of fifteen trustees and by the central council. Supported by voluntary contributions and the appropriations made from the Fitch income, held in trust by the society for maintaining these several branches of charitable work. T. Guilford Smith, president, 9 German Insurance Building; Sherman S. Rogers, vice-president, 28 Erie street; Nathaniel S. Rosenau, secretary and treasurer, Nos. 1 and 2 Fitch Institute. Apply in person to any district office, or name sent by private individual or co-operating society.

CASTLETON — RICHMOND COUNTY (S. I.).—Charity Organization Society of Castleton.—To raise the needy above the need of relief; to prevent begging and imposition; and to diminish pauperism; and to prevent children from growing up as paupers. Controlled by a central council. Supported by private subscriptions. Mrs. G. F. Hicks, president, Clinton avenue, New Brighton; Mrs. Thomas Melville, vice-president, West New Brighton; Miss Curtis, secretary, West New Brighton; Mrs. W. P. Raynor, treasurer, New Brighton; Miss N. M. Ford, agent, to whom apply by letter or in person to the Sentinel Building, New Brighton, on Mondays, Wednesdays and Fridays, from 11 a. m. to 1 p. m.

LOCKPORT — NIAGARA COUNTY.—Charity Organization Society of the City of Lockport, N. Y.—Founded February 22, 1891. Room 12, Y. M. C. A. Building, corner of Main and Locust streets.—To be a center of intercommunication between the various charitable agencies in the city; to foster harmonious co-operation between them, and to check the evils of the overlapping of relief; to prevent children from growing up as paupers; to encourage thrift, self-dependence and industry through friendly intercourse, advice and sympathy; and to help the poor to help themselves; to raise the needy above the necessity of relief; to prevent begging and imposition and to diminish pauperism. Assistance is rendered to all persons who are out of employment or who are objects of charity, through improvidence or intemperance, conditional upon the good conduct and progress of the applicant, who must make every possible individual effort to raise himself or herself above the necessity of receiving charitable or municipal relief. Controlled by a central council, elected annually by the members. Supported by members' subscriptions. Willis H. Howes, president; Miss Elizabeth R. Helmer, vice-president; G. G. Lansing, secretary; George C. Lewis, treasurer, all of Lockport. Apply at the office, as above.

NEWBURGH — ORANGE COUNTY.—Associated Charities of Newburgh.—Incorporated November 22, 1866, under the general statute. No. 39 Second street.—For the discouragement of mendicancy and indiscriminate alms-giving, and the elevation and improvement of the condition of the poor. The work is conducted on the same basis as that of other charitable organization societies. It maintains an employment bureau for women, open daily from 10 to 12 a. m., and co-operates with the alms-house board in procuring work for able-bodied men from the municipal authorities of Newburgh. Controlled by a board of twenty-one managers. Supported by voluntary contributions, membership, and by sales of work. Mrs. F. D. Hitch, president; Mrs. Culbert and Mr. A. Smith Ring, vice-presidents; Miss Mary Akerly, secretary; Miss R. M. St. John, treasurer, all of Newburgh. Mrs. Mary G. Wood, superintendent, to whom apply at the office, from 10 a. m. to 5 p. m.

NEW YORK CITY.—The Charity Organization of the City of New York. Incorporated May 10, 1882, under a special act. United Charities Building, N. E. Fourth avenue and Twenty-second street.—The State Board of Charities adopted, October 11, 1881, the following preamble and resolution:

“Whereas, There are in the city of New York a large number of independent societies engaged in teaching and relieving the poor of the city in their own homes, and

“Whereas, There is at present no system of co-operation by which these societies can receive definite mutual information in regard to the work of each other, and

“Whereas, Without some such system, it is impossible that much of their effort should not be wasted, and even do harm by encouraging pauperism and imposture, therefore,

“Resolved, That the commissioners of New York city are hereby appointed a committee to take such steps, as they may deem wise, to inaugurate a system of mutual help and co-operation between such societies.”

NEW YORK CITY — (Continued).

In accordance with this resolution, the New York city members of the State Board of Charities invited citizens, representing, as far as possible, all portions of the community, to assist in organizing this society, under a carefully prepared constitution, and to act as a provisional central council until their successors should have been chosen by this society at large, at its first annual meeting.

The following article from the constitution shows the principles and objects of the society:

Article II.— Principles and Objects.

Section 1. This society shall be conducted upon the following fundamental principles:

1. Every department of its work shall be completely severed from all questions of religious belief, politics and nationality.

2. No person representing the society in any capacity whatsoever shall use his or her position for the purpose of proselytism or spiritual instruction.

3. The society shall not directly dispense alms in any form.

§ 2. The objects of the society shall be—

1. To be a center of intercommunication between the various churches and charitable agencies in the city. To foster harmonious co-operation between them, and to check the evils of the overlapping of relief.

2. To investigate thoroughly, and without charge, the cases of all applicants for relief which are referred to the society for inquiry, and to send the persons having a legitimate interest in such cases full reports of the results of investigation. To provide visitors, who shall personally attend cases needing counsel and advice.

3. To obtain from the proper charities and charitable individuals suitable and adequate relief for deserving cases.

4. To procure work for poor persons who are capable of being wholly or partially self-supporting.

5. To repress mendicancy by the above means and by the prosecution of impostors.

NEW YORK CITY — (Continued).

6. To promote the general welfare of the poor by social and sanitary reforms and by the inculcation of habits of providence and self-dependence.

The central office of the society is the center of intercommunication above named. It receives from all co-operating churches and charitable agencies detailed reports concerning their beneficiaries, and distributes (confidentially) information so received to each of them which reports that it is aiding, or is asked to aid, the same cases. The fifth and sixth of the foregoing "objects" also receive the special care of the central office.

The work implied in the second, third and fourth of these "objects" is the special care of the district committees of the society, as fast as they are formed; and to these the actual care of dependent cases, residing in the districts assigned to each, may be referred. Cases not residing in districts so assigned, and not already sufficiently cared for by other societies or churches, may be referred to the central office of this society.

THE CHARITY ORGANIZATION SOCIETY THUS BECOMES:

1. A *clearing house* of registration, information and associated action among all the charitable activities of the city.

2. An *exchange* through which to apply the *co-operative* system to benevolent work, and bring to bear on each case of distress the best available resources of the whole city, especially for *permanent* and *adequate* relief; above all along such moral lines as are likely to render applicants independent of further temporary or physical relief.

3. A *mercantile agency* for information concerning the charitable enterprises of the city (of which there are many fraudulent and pretended ones), and also concerning applicants for charitable relief.

The society has no funds of its own for direct relief, but it has a permanent endowment fund, the income of which goes towards paying the expenses of the central and district

NEW YORK CITY — (Continued).

offices; and the increase of this fund will enable the society the more efficiently to enlarge and carry on its work.

The society has in its registration bureau the records of more than 160,000 families or cases; and is a center of exchange for 488 co-operating societies and churches. During 1892, 6,924 cases were investigated and treated for members and co-operating agencies or on personal application, and 732 street beggars were dealt with. In addition to the general office, there are nine district offices and one central office (at No. 105 East Twenty-second street) for cases not covered by the above districts, which are located as follows:

District No. 1. No. 150 Nassau street.

District No. 2. No. 105 East Twenty-second street.

District No. 3. No. 297 Broome street.

District No. 4. No. 105 East Twenty-second street.

District No. 5. No. 105 East Twenty-second street.

District No. 6. No. 1473 Broadway.

District No. 7. No. 214 East Forty-second street.

District No. 8. No. 527 Amsterdam avenue.

District No. 9. No. 169 East Sixty-third street.

District No. 10. No. 165 West One Hundred and Twenty-seventh street.

Controlled by the Central Council, supported by voluntary contributions and legacies. Robert W. de Forest, president, 62 William street; Charles S. Fairchild, vice-president, 46 Wall street; Constant A. Andrews, treasurer, 2 Wall street; Charles D. Kellogg, general secretary, United Charities building. Office hours, October first to June, inclusive, 9 to 6 p. m.; Saturday, 9 to 3 p. m.; July to September, inclusive, 9 to 4 p. m., and Saturdays, 1 p. m. Cable address, "Charity," New York. The Society maintains the following:

PENNY PROVIDENT FUND. — A general provident fund, which will receive any sum from one cent upwards. Money can be deposited in more than 200 stamp stations (many of which are open daily except Sundays and holidays), but can be with-

NEW YORK CITY — (Continued).

drawn only at the station in which it was deposited. It has about 27,700 depositors, and its deposits are kept in the Continental Trust Co. Lists of stations or sub-offices, corrected monthly, may be had at the central office. Otto T. Bannard, chairman and treasurer; Abram S. Hewitt, Chas. S. Fairchild, Robert W. de Forest, Chas. C. Beaman, Geo. E. Dodge and Walter Jennings, central committee of the fund. Apply to Miss Marion Messemer, secretary and cashier. Office, United Charities building, Twenty-second street and Fourth avenue. Office hours, 11 a. m. to 4 p. m., except Saturdays, 9 a. m. to 12 m.

Woodyard. — Nos. 516 to 522 West Twenty-eighth street.

Enables relief societies and private persons to help able-bodied men asking relief in a way less demoralizing to them than the direct receipt of alms, and tests their willingness to work. Last year, 3,225 days' labor was given to 854 different men. Receipts, \$7,933; expenditures, \$7,665. Men with homes were paid fifty cents per day, those without homes were given lodgings and meals as payment. Supported by sales of wood and voluntary contributions. Apply at the yard or at United Charities building, 105 East Twenty-second street. Henry S. Iselin, chairman woodyard committee.

Park Avenue Laundry. — Fully equipped and competent to do first-class work for the public; its object being to teach women all kinds of laundry work, so that they may be able to support themselves and earn higher wages. Novices are not allowed to work on family garments until sufficiently expert to do fine work. Names and addresses of graduated expert laundresses can be obtained at the laundry.

The "Charities Review," a monthly periodical of practical sociology (November to June inclusive). Devoted to the discussion of social and economic questions, and to the consideration of subjects of special interest to active workers and students in the field of charities. To members of the Charity

NEW YORK CITY — (Continued).

Organization Society is sent, with the Review, the usual monthly confidential bulletin, warning against fraudulent and unworthy societies and professional and dishonest applicants for relief, and containing other timely information. Subscription price, one dollar a year.

POUGHKEEPSIE — DUTCHESS COUNTY.—The Charity Organization Society of Poughkeepsie is not in active work at present. Signed by Henry V. Pelton.

ROCHESTER — MONROE COUNTY.—Rochester Society for the Organization of Charity. Incorporated December 30, 1890, under the general statute. Commenced active work February 1, 1891. No. 87 South Washington street.—To systematize and bring into co-operation the various charities of Rochester; to reduce and prevent pauperism; to detect and guard against impostors; to promote habits of thrift and self-dependence among the poor. Controlled by a board of trustees. Supported by voluntary contributions by solicitation. J. W. Oothout, president, 401 East avenue; George W. Loomis, Mrs. Sarah Kuichling, William F. Peck, vice-presidents; Mrs. Helen D. Arnold, secretary and treasurer, 87 South Washington street, to whom apply, or to district secretaries at 19 Smith street, and 10 South Union street.

ROME — ONEIDA COUNTY.—Rome Bureau of Employment and Relief.—No. 116 Washington street. (See class III, division 1.)

SYRACUSE — ONONDAGA COUNTY.—Bureau of Labor and Charities of Syracuse, and Society for the Prevention of Cruelty to Children.—Incorporated, March 22, 1881, under the general statute, and the acts subsequently passed amendatory and supplementary, 4 Hendricks block.—The object of this bureau shall be:

1. To assist worthy applicants in obtaining employment.
2. To bring into harmonious co-operation with each other the county superintendent of the poor, the city overseer of

SYRACUSE — (Continued).

the poor; the various churches, charitable agencies and individuals of the city, and thus to check effectually the evils of the overlapping of relief caused by simultaneous but independent action.

3. To place gratuitously at the disposal of all charitable agencies and private persons having a legitimate interest in any case or cases, full reports of the results of the investigations made; and to investigate all cases referred to the bureau for inquiry and report.

4. To obtain from the proper charities, from the county superintendent, the overseer of the poor and charitable individuals, suitable and adequate relief for deserving cases.

5. To assist, from its own funds, as far as possible, in the form of loans, all suitable cases for which adequate assistance can not be obtained from other sources.

6. To repress street begging, and to expose and prosecute impostors.

7. To promote, as far as possible, the general welfare of the poor, by means of social and sanitary reforms, and by the inculcation of habits of providence and self-dependence.

Also, to protect, to interpose for and rescue where need be, children that are exposed to neglect, to maltreatment and cruelty, or who are found to be wayward, and, when practicable, to find homes for them in the country and elsewhere, or place them in asylums, reformatories or return them to friends.

Controlled by the central committee. Supported by voluntary contributions of the citizens. Charles P. Clark, president; Rev. G. B. Spalding, first vice-president; C. B. D. Mills, general secretary; Lena P. Bennett, assistant secretary; O. V. Tracy, treasurer. Apply at the office during business hours. The affairs of this bureau are the same as the "Society for the Prevention of Cruelty to Children," which has a separate incorporation.

TARRYTOWN — WESTCHESTER COUNTY.—Provident Association of Tarrytown.—Incorporated December, 1889, under

TARRYTOWN — (Continued).

the general statute.—To carry on industrial schools, thereby teaching habits of thrift and economy; to afford medical aid and hospital advantages, under proper regulations, where poverty, sudden exigency, or other sufficient reason calls for the exercise of such benevolence; to carry on other work of a similar nature for the benefit of the community at large, when occasion for doing shall arise; to obtain and possess real estate, wherein and whereon the objects above named may be prosecuted. Relief is given to those cases, where sufficient reasons warrant the exercise of such benevolence. Controlled by a board of managers. Supported by general subscriptions and contributions. Richard B. Coutant, president; Lucius T. Yale, and Mrs. S. H. Thayer, vice-presidents; Mrs. W. H. Morse, secretary; D. A. Rowe, treasurer, all of Tarrytown. Apply at the Association House, or to any of the officers.

TIVOLI—DUTCHESS COUNTY.—Charity Organization Society.**WATERTOWN — JEFFERSON COUNTY.—**Bureau of Charities.

Incorporated ——. Organized in 1884.—To investigate all cases of reported destitution; to procure relief for immediate needs or cases of sickness; to provide temporary work as a test and permanent employment to the able-bodied and deserving poor; to repress begging and to expose fraud and imposture. About forty families, including 170 children, were cared for last year. Controlled by a board of directors. Supported by voluntary contributions. John C. Knowlton, president, Sterling place; Lotus Ingalls, vice-president, 17 Mullin street; Jesse Ayers, treasurer, 6 Sherinan street; Mrs. U. C. Walkers, secretary and agent, to whom apply during office hours, at 22 Stone street.

YONKERS — WESTCHESTER COUNTY.—Charity Organization Society of Yonkers. No. 3 Radford Building. N. P. Otis, president; George Raynor, Jr., secretary.

CLASS II.

GOVERNMENT OR OFFICIAL AID.

THE CHARITY ORGANIZATIONS, SOCIETIES AND ASSOCIATIONS (See pages 1-14) seek to obtain, from the proper sources, suitable and adequate relief of the kinds named in the following divisions, or to direct thereto.

DIVISION I.—STATE RELIEF.

[N. B.—The laws of the State of New York provide that all persons who are blind, lame, old, sick or decrepit, or in any way disabled or enfeebled so as to be unable by their work to maintain themselves, shall be maintained by the county or town in which they may be, in case the parents or children (or, in the discretion of the court, certain near relatives) are unable to contribute to their support.] Taken from the "New York Charities Directory."

ALBANY — ALBANY COUNTY.—State Board of Charities.

(Office created 1867). Capitol, Albany. Composed of eleven commissioners appointed by the Governor and the Senate for terms of eight years. They receive no salary. They are required by law to visit every State and county charitable and reformatory institution at stated intervals, and to make an annual report to the Legislature. They also have authority to visit any private charitable institution, to inspect buildings, examine books and papers and see all inmates; and those who obstruct them in this right are liable to a penalty of \$250. The commissioners are as follows: William R. Stewart (First Judicial District), New York; Dr. Stephen Smith, and Mrs. Beekman de Peyster (New York county), New York city; Edward H. Litchfield (Second Judicial District), Brooklyn; John H. Van Antwerp (Third Judicial District), Albany; Edward W. Foster (Fourth Judicial District), Potsdam; Robert McCarthy (Fifth Judicial District), Syracuse; Peter Walrath (Sixth Judicial District), Chittenango; Oscar Craig (Seventh Judicial District), Rochester; Wm. P. Letchworth (Eighth Judicial District), Buffalo; Dr. Charles S. Hoyt, secretary, and James O. Fanning, assistant secretary, to either of whom apply for further information at the office in the Capitol.

ALBANY — (Continued).

State Board of Health.—Office, Capital. Investigates the causes of disease and mortality, and provides for registration of vital statistics. Lewis Balch, M. D., Secretary.

State Commission in Lunacy. (Created under chapter 283, Laws of 1889, and chapter 273, Laws of 1890).—Office, Capitol. Has power to investigate the condition and administration of the public and private insane asylums and institutions of the State, and the condition and treatment of patients therein. All complaints should be made to the Commission at Albany. Carlos F. MacDonald, M. D., Goodwin Brown, Henry A. Reeves, commissioners; T. E. McGarr, secretary.

Factory Inspector. (Office created under chapter 409 Laws of 1886;—Chapter 462, Laws of 1887; chapter 398, Laws of 1890, and chapter 673, Laws of 1892.)—Office at the Capitol.—The inspector with his assistant and force of deputy inspectors visits and inspects the factories, workshops and other manufacturing establishments in the State, to enforce the laws regulating the same as to children and operatives, and to prosecute violations of the same.

Superintendent of State Prisons. (Office created 1877.)—Has general supervision of the State prisons, of the convicts therein, and of the discipline and penal concerns therein. Austin Lathrop, superintendent; Michael Conway, of Troy, State agent for discharged convicts.

ALBION — ORLEANS COUNTY.—Western House of Refuge for Women. Founded by special act, chapter 238, Laws of 1890. To provide for the establishment of a house of refuge for women to accommodate 150 inmates.

AUBURN — CAYUGA COUNTY.—State Asylum for Insane Criminals, formerly at Auburn, is now removed to Matteawan, Dutchess county, which see in this division.

BATAVIA — GENESEE COUNTY.—New York State Institution for the Blind. Incorporated by special act, chapter 587, Laws of 1865. Amendatory acts, chapter 715, Laws of 1871; chapters 104 and 616, Laws of 1872; chapters 463 and 760,

BATAVIA — (Continued).

Laws of 1873; chapters 199 and 567, Laws of 1875.— For the education of the blind. All blind children of school age, of sound mind and capable of receiving instruction are admitted and trained in industrial pursuits. Capacity for 150. Average number of inmates last year, 129. Controlled by a board of trustees. Supported by an appropriation from the State. Hon. Lee R. Sanborn, president, Sanborn, N. Y.; G. S. Griswold, treasurer, Batavia; A. G. Clement, superintendent. Apply to the board of trustees at any time.

BATH — STEUBEN COUNTY.— New York State Soldiers and Sailors' Home. Incorporated by special act, chapter 48, Laws of 1878; amendatory act, chapter 407, Laws of 1879. Opened December 25, 1878. (Formerly the Grand Army of the Republic Soldiers' Home of New York.)— To care for and support every honorably discharged soldier or sailor who served in the army or navy of the United States during the late rebellion, who enlisted from the State of New York, or who shall have been a resident of the State for one year preceding his application for admission, and who shall need the aid or benefit of said home, in consequence of physical disability or other cause within the scope of the regulations of the board. To such, a permanent home is given during good behavior. No one of unsound mind, or who is an inmate of any National Home, or who has been discharged therefrom within three months previous, at time of application, is received. Capacity for 1,200. Average number of inmates, 1,010. Controlled by a board of trustees. Supported by State appropriations, and \$100 for each inmate supported in the home or otherwise is paid by the General Government to the State Treasurer annually. General Henry W. Slocum, president, Brooklyn; John F. Little, secretary, Bath; Frank Campbell, treasurer, Bath; Wm. F. Rogers, superintendent, to whom apply at the home, upon a special form over parties' own signature, or to any member of the board of trustees.

BINGHAMTON—BROOME COUNTY.—Binghamton State Hospital (formerly "Binghamton Inebriate Asylum," changed in 1879 to "Asylum for Insane"). Incorporated by special act, chapter 280, Laws of 1879. Amendatory acts passed, chapter 61, Laws of 1880; chapter 215, Laws of 1886; chapter 427, Laws of 1889; chapter 132, Laws of 1890. Opened in October, 1881. For the care and treatment of the insane. Capacity for 1,050. Average number inmates annually cared for, about 1,136. Controlled and supported by the State. Dr. T. S. Armstrong, superintendent; Dr. C. C. Eastman, first assistant; Dr. O. J. Wiley, second assistant; Dr. J. F. Fitzgerald, third assistant; Dr. A. M. Collier, fourth assistant; Dr. E. G. Crum, lady physician; Edwin Evans, steward; Mrs. E. A. Smith, matron. James DeWitt, treasurer, Binghamton.

BROOKLYN (Flatbush, L. I.)—KINGS COUNTY.—State Alms-house.—Receives in the Kings County Alms-house non-resident destitute poor who have no settlement in any other county of this State, and are committed by the Department of Public Charities and Correction. Apply to the superintendent of out-door poor, northwest corner Eleventh street and Third avenue.

BUFFALO — ERIE COUNTY.—Le Couteulx St. Mary's Benevolent Society for the Deaf and Dumb (The).—No. 125 Edward street. (See class VI, division 2.)

Buffalo State Hospital. Incorporated by special act, April 23, 1870. Opened November, 1880. Forest avenue, near park lake.—For the care and treatment of the insane residents of the hospital district of the State of New York. Patients are admitted upon medical certificate of lunacy and supported at private expense, or upon the order of superintendents of poor and county judges. Capacity for 525. Average number for this year, 608. Controlled by a board of managers. Supported by the State and by board of private patients. John D. Hill, Daniel H. McMillan, Charles G. Curtiss, Charlotte S. Williams, John H. Meech, all of Roch-

BUFFALO — (Continued).

ester; Wm. M. Irish, Olean; Francis B. Brewer, Westfield, and Caroline B. Stoddard, Rochester, managers; Elias S. Hawley, secretary and treasurer, 110 Franklin street, Buffalo; Judson B. Andrews, M. D., superintendent, to whom apply at the hospital.

ELMIRA — CHEMUNG COUNTY.—New York State Reformatory.—Incorporated by special act. (See Revised Statutes, vol. III, part IV, chap. III, pp. 241-250. Amendatory acts, chap. 207, Laws of 1876; chap. 173, and chap. 711, Laws of 1877; chap. 382, Laws of 1889.) Opened July 24, 1876. For the reformation of criminals, between the ages of 16 and 30, admitted only when sentenced for felony by the State courts. Capacity for 1,260. Average number of inmates, 1,204. Controlled by a board of managers. Supported by appropriations by the State and labor of inmates. Wm. C. Wey, president, Elmira; Benjamin L. Swartswood, secretary, Cayuta; M. H. Arnot, treasurer; James B. Rathbone and Wm. H. Peters, of Elmira, managers. Z. R. Brockway, general superintendent at the reformatory.

HUDSON — COLUMBIA COUNTY.—House of Refuge for Women at Hudson, N. Y.—Incorporated by special act, chapter 187, Laws of 1881. Amendatory act, chapter 17, Laws of 1887. Opened in November, 1887. To reform females guilty of misdemeanors, except felonies, between the ages of 15 and 30 years, committed from all counties except New York and Kings. Capacity for 250. Average number of inmates, 244. Controlled by a board of managers. Supported by the State. Harper W. Rogers, president; Samuel R. Rainey, secretary and treasurer; Mrs. Sarah V. Coon, matron, at the refuge.

MALONE — FRANKLIN COUNTY.—Northern New York Institution for Deaf-Mutes.—Incorporated by special act, January twenty-fourth, chapter 275, Laws of 1884. Opened September in 1884. For the education of the deaf. All those who are

MALONE — (Continued).

deaf and dumb, or simply deaf, and who possess faculties capable of instruction, are received, but idiots and feeble-minded mutes are excluded. Capacity for 100. Average number of inmates, eighty-four. Controlled by a board of trustees. Supported by the State and by the counties which send children to the institution. John I. Gilbert, president; Morton S. Parmelee, secretary; D. W. Lawrence, treasurer; Rev. Thomas Gallaudet, D. D., of New York, and eleven other gentlemen, residents of Malone, comprise the board of trustees. Apply to H. C. Rider, superintendent of the school, at any time.

MATTEAWAN (P. O., Fishkill-on-the-Hudson) — DUTCHESS COUNTY.—State Asylum for Insane Criminals.—This is the oldest and pioneer institution anywhere established for the exclusive care and treatment of the criminal insane. Although an act was passed in 1835, which provided for the erection of a separate asylum for insane convicts who, prior to that date, had been cared for at Utica, no appropriation was made until 1857; and it was not until the following year that the organic act (Chap. 130, Laws of 1858) was passed, which legally established this asylum as the "State Lunatic Asylum for Insane Convicts." The buildings were first opened for the reception of patients, February 2, 1859, at Auburn, N. Y. Some years afterwards, by chapter 895, Laws of 1869, its scope was materially enlarged and its title changed to the "State Lunatic Asylum for Insane Criminals." By this act, it was empowered to receive unconvicted cases upon judicial orders from the courts and from the various State asylums by transfer. The original organic act has since been revised by chapter 446, Laws of 1874; chapter 574, Laws of 1875; and finally by chapter 289, Laws of 1884; and its name changed to the present title. The asylum is now operated under the provisions of chapter 289, Laws of 1884; chapter 446, title 2d, Laws of 1874; chapter 515, Laws of 1884; and such provisions of the general laws as are applicable to

MATTEAWAN — (Continued).

its administration. The asylum at Auburn, some years ago, became overcrowded; and, in consequence thereof, a commission was appointed by chapter 192, Laws of 1886, to report to the Legislature of the following year upon the best method of providing suitable farming lands for the occupation of the inmates of this asylum. The first appropriation was made by chapter 545, Laws of 1887, and the new building at Matteawan was opened for patients, April 25, 1892; the population of the Auburn asylum being transferred on that date and the old institution abandoned. The revision of the organic act of 1884 is now again under consideration and will be presented to the Legislature of 1893. The objects of this asylum are to provide a hospital for the care, custody and treatment of such patients as may be committed to it by the various courts of the State in cases where insanity appears to have existed at the time the criminal act was committed; or where insanity subsequently develops either while the subject is awaiting trial, or after conviction. If sentenced to any of the various penal institutions, a patient may be transferred therefrom to this asylum, providing that insanity should arise or be disclosed while he is undergoing sentence. This institution has a capacity for about 450 men and 100 women. It is supported in part by the State and in part by the various counties to which are chargeable such patients, as are directly committed upon judicial orders by the courts. The officers of the institution are: Hon. Austin Lathrop, Superintendent of the State Prisons, manager, Corning; and H. E. Allison, M. D., medical superintendent, Matteawan; J. Elwin Courtney, M. D., first assistant physician; Luther C. Jones, M. D., assistant physician; R. B. Lamb, M. D., clinical assistant; J. P. Howell, steward at the asylum. Address all communications to the medical superintendent at the asylum (P. O., Fishkill-on-the-Hudson).

MIDDLETOWN — ORANGE COUNTY.—Middletown State Homoeopathic Hospital. Incorporated by special act, chapter 474, Laws of 1870. Amendatory acts, chapter 237, Laws of 1871;

MIDDLETOWN — Continued).

chapter 414, Laws of 1874; chapter 634, Laws of 1875; chapter 126, Laws of 1876. Opened April 26, 1874. For the care and treatment of the insane of the State of New York, upon the principle of medicine known as the homoeopathic. By order of the State Commission in Lunacy, those who can pay more than ten dollars per week, and paupers residing outside of district, who are unable to pay for transportation, are excluded. Controlled by a board of trustees appointed by the Governor and approved by the Senate. Supported by appropriation from counties and by individuals for the care of patients. Grinnell Burt, president, Warwick; Egbert Guernsey, M. D., vice-president, New York city; M. D. Stivers, secretary; and Uzal T. Hayes, treasurer, of Middletown; Selden H. Talcott, M. D., medical superintendent, to whom apply at the hospital at any time.

NEWARK — WAYNE COUNTY.—New York State Custodial Asylum for Feeble-Minded Women. Incorporated by special act, chapter 281, Laws of 1885. Opened September, 1878. For the custody and maintenance of feeble-minded women of a child-bearing age, committed to the asylum by the county superintendents of the poor, at the expense of the State; or by relatives and friends at private expense; for the improvement of the mental, moral and physical condition of these inmates; to provide a custodial home for feeble-minded women that are found in the county poor-houses; to prevent a mis-association of the sexes, and an increase of this class of county and State poor. Capacity for 350. Average number of inmates, 320. Controlled by a board of trustees. Supported by the State. Silas S. Pierson, president, Newark; Silas N. Gallup, secretary, Macedon; Mrs. Eliza C. Perkins, treasurer, Newark; W. L. Willett, superintendent; M. Alice Brownell, M. D., resident physician. Apply through the county superintendents of the poor, to the superintendent, at the asylum, at any time.

NEW YORK CITY.—Association for the Improved Instruction of Deaf-Mutes. Lexington avenue and Sixty-seventh street. (See class VI, division 2.)

Commissioners of Quarantine of the State of New York (created 1738). Office, 71 Broadway.—To protect the public health from imported contagious diseases. Boarding station for vessels from infected parts is in the lower bay, below Clifton, near Fort Wadsworth, Staten Island, from November to April, inclusive, and on ship "Samuel D. Carlton" from May to October, inclusive. Hospital of observation is on Hoffman island, where exposed passengers are detained during the period of danger. Hospital for yellow fever at Swinburne island, three and one-half miles below the Narrows. Here is also a crematory, where all bodies who die in the hospital are cremated, unless friends object within twenty-four hours. The health officer has general superintendence and control of all. Number of vessels inspected in 1889, 7,311. Supported by State appropriations. George W. Anderson, president; Charles F. Allen, John A. Nichols, commissioners; Edward S. Mellen, secretary. Dr. Wm. T. Jenkins, health officer, Clifton, Staten island.

National Home for Disabled Volunteer Soldiers. Office of board of managers, No. 39 Park row. (See class II, division 3.)

New York House of Refuge (Randall's island). (See Society for the Reformation of Juvenile Delinquents, class VIII, division 6.)

New York Idiot Asylum (Randall's island). (See class VI, division 4.)

New York Institution for the Blind.—Ninth avenue and Thirty-fourth street. (See class VI, division 1.)

New York Institution for the Instruction of the Deaf and Dumb.—West One Hundred and Sixty-third street and Grand Boulevard. (See class VI, division 2.)

Society for the Reformation of Juvenile Delinquents in the City of New York (House of Refuge).—Randall's island, twelfth ward. (See class VIII, division 6.)

NEW YORK CITY — (Continued).

State Charities' Aid Association.—Incorporated 1880; organized 1872. United Charities Building, corner Twenty-second street and Fourth avenue.—Organizes local committees to visit the city, county and town charitable institutions of the State; and advocates measures tending to diminish pauperism and relieve suffering and destitution. It has standing committees:

a. On the care, training and disposition of dependent children.

b. On the repression of able-bodied pauperism.

c. On hospitals, for improving the construction, organization and administration of the public charitable institutions of the State; and

d. On finance, to obtain funds for the work of the association.

The association issues various publications relating to its work, and a monthly paper, "The State Charities' Record." Office hours, 9 a. m. to 4 p. m. Supported by voluntary contributions. Expenditures about \$5,500 yearly. Charles F. Chandler, president, 51 East Fifty-fourth street; Mrs. William B. Rice, vice-president, 17 East Sixteenth street; Charles S. Fairchild, treasurer, 76 Clinton place; Homer Foulks, secretary, 105 East Twenty-second street; Mrs. Anna T. Wilson, assistant secretary. Has as an auxiliary, the Hospital Book and Newspaper Society.

OGDENSBURG — ST. LAWRENCE COUNTY.—St. Lawrence

State Hospital.—Incorporated by special act, chapter 375, Laws of 1887. Amendatory acts, chapters 75 and 327, Laws of 1888; chapter 570, Laws of 1889; chapter 132, Laws of 1890. Opened December in 1890. For the care of the insane. Capacity for 1,500. Average number of inmates, 419. Controlled by a board of managers appointed by the Governor. Supported by fixed charges for maintenance by the counties. P. M. Wise, superintendent, to whom apply.

POUGHKEEPSIE — DUTCHESS COUNTY.—Hudson River

State Hospital. Incorporated by special act, chapter 93,

POUGHKEEPSIE — (Continued).

Laws of 1867. Amendatory act, chapter 446, Laws of 1874. Opened October, 1871. For the treatment of insane patients; but more particularly for the pauper and indigent insane of the Hudson River Hospital district, committed by the county superintendent of the poor, or for those patients who apply, accompanied with such form of a medical certificate, as may be required by the State Commission in Lunacy. Capacity for, and average number of patients, 850. Controlled by a board of managers. Supported by the State appropriations for patients committed and by board of private or pay patients. Apply to the county judge of the county, in which the patient resides, or to the county superintendent of the poor.

ROCHESTER — MONROE COUNTY.—Rochester State Hospital.—Incorporated by special act, chapter 335, Laws of 1891. Opened July 1, 1891. South avenue, Rochester. For the hospital care of indigent and pauper insane, according to the statutes of the State. Capacity for 300. Controlled by a board of managers. Supported by the State and county. E. H. Howard, M. D., superintendent; E. B. Potter, M. D., assistant physician. Apply to the county judges and overseers of the poor.

State Industrial School.—Phelps avenue. No child under 12 years of age, shall be sentenced or committed to the school on conviction for any crime or offense, less than a felony. Average number of inmates, 782.

Western New York Institution for Deaf-Mutes.—Reorganized by Legislature, and authorized to receive pupils upon appointment by State and county officers, under provisions of chapter 213, Laws of 1875, by "An act in relation to Western New York Institution for Deaf-Mutes," chapter 331, Laws of 1876. Incorporated February 4, 1876. Opened in October, 1876. No. 945 North St. Paul street.—For the education of the deaf, appointed under statute, by proper State and county officers, or those whose tuition is paid for in advance by

ROCHESTER — (Continued).

parents. Capacity for 180 to 190. Average number of inmates, 140. Controlled by a board of directors. Supported by tuition fees, paid from the public treasury for regularly appointed pupils, and by parents. Hon. George G. Clarkson, president, 256 Alexander street; Sylvanus A. Ellis, secretary, 13 Clifton street; Gilman H. Perkins, treasurer, 221 East Main street; Z. F. Westervelt, superintendent, to whom apply for admission, upon blanks supplied by him, on request.

ROME — ONEIDA COUNTY.—Central New York Institution for Deaf-Mutes.—Incorporated January, 1875, under the general statute. Opened March, 1875. For the education of the deaf of the State of New York, over 6 years of age, who are capable of instruction. Capacity for 175. Average number of inmates, 140. Controlled by a board of trustees. Supported by State and county appropriations. B. J. Beach, president; J. J. Bissell, secretary and treasurer; E. B. Nelson, principal, to whom apply at any time at the institution.

SYRACUSE — ONONDAGA COUNTY.—Syracuse State Institution for Feeble-Minded Children.—Incorporated by special act, chapter 502, Laws of 1851. Amendatory acts, chapter 159, Laws of 1853; chapter 163, Laws of 1855; chapter 220, Laws of 1862; chapter 739, Laws of 1867; chapter 72, Laws of 1878; chapter 51, Laws of 1891. Opened in 1851. Seymour street. Branch institution for male adults, at Fairmount, five miles distant. For the training and education of the feeble-minded, over 7 and under 15 years of age; except such as are epileptic, greatly deformed or insane. Capacity for 530. Average number of inmates about 500. Controlled by a board of trustees. Supported by the State and income from private patients. Right Reverend F. D. Huntington, LL. D., permanent chairman; Robert Aberdein, M. D., secretary; Alfred Wilkinson, treasurer, all of Syracuse. James C. Canon, M. D., superintendent, to whom apply in person or by letter.

UTICA — ONEIDA COUNTY.— Utica State Hospital.— Incorporated by special act April 7, 1842. Amendatory act, chapter 446, Laws of 1874, and many others. Opened in January, 1843. For the care and treatment of the insane; particularly the dependent insane and such other persons whose means do not enable them to pay the higher rates, charged in the private institutions. Patients must be residents of Albany, Fulton, Hamilton, Herkimer, Madison, Montgomery, Oneida, Saratoga and Schenectady counties. Capacity for 650. Average number of inmates yearly, 690. Controlled by a board of managers, appointed by the Governor and confirmed by the Senate. Supported by the counties from which patients are received, except in the case of private patients. P. V. Rogers, president; George E. Dunham, secretary; Thomas W. Seward, treasurer; G. Alder Blumer, M. D., superintendent and physician; Clara Smith, M. D., woman physician. Apply to the superintendent of poor for the charity patients, and in case of private patients, to the medical staff at the hospital.

WILLARD — (Seneca Lake) SENECA COUNTY.— Willard State Hospital.— Incorporated by special act, chapter 342, Laws of 1865. Amendatory acts, chapter 446, Laws of 1874; chapter 190, Laws of 1881; chapter 178, Laws of 1885; chapters 126, 132 and 136, Laws of 1890, and many others. Opened in 1869. For the care and treatment of the insane only. Capacity for 1,938. Last year there were 2,055 inmates, and \$58,339 was realized on the value of the farm products and manufactured articles. Applications for admission of patients should, when practicable, be made in advance of bringing them to the hospital, and each patient should be accompanied by some responsible person. Controlled by a board of eight trustees, appointed by the Governor. Supported by State appropriations and by board of private patients. Hon. S. G. Hadley, president, Waterloo, N. Y.; A. S. Stothoff, secretary, Watkins, N. Y.; James B. Thomas, treasurer, Ovid, N. Y.; Charles W. Pilgrim, M. D., superintendent of the hospital, to whom address all correspondence relative to patients, or to the business of the hospital.

DIVISION 2.—CITIES AND COUNTIES RELIEF. (See Note at the Head of Division 1 of this Class, Also, Alms-houses and Poorhouses. Class V, Divisions 1 and 4.)

AUBURN — CAYUGA COUNTY.— Board of Charities.

BROOKLYN — KINGS COUNTY.— Commissioners of Charities and Correction.— Twenty-nine Elm place, corner Livingston street. Frank B. Gott, president; Francis Nolan, George H. Murphy, treasurers; Bernard Lamb, secretary. Maintain the following:

Kings County Hospital, Flatbush. (See class VII, division 1.)

Kings County Hospital Dispensary, Flatbush. (See class VII, division 6.)

Kings County Asylum for the Insane, Flatbush. (See class VI, division 4.)

Kings County Branch Insane Asylum, King's Park, Suffolk county. (See class VI, division 4.)

Kings County Alms-house, Flatbush, including the Babies' Ward. (See class V, division 1.)

Kings County Penitentiary, Carroll street and Nostrand avenue.

Kings County Jail, Raymond and Willoughby streets.

Kings County Ward Bureau.

Kings County Morgue, Willoughby street, near Canton.

City Alms-house.

No outdoor relief is given in Brooklyn.

BUFFALO — ERIE COUNTY.— City Poor Relief Department: Agents for Erie county to procure homes for destitute children who are county charges, Mrs. Rose Lane, 190 Forest avenue, and Mrs. W. P. Dean, 230 Allen street.

Superintendent of the Poor.

Erie County Penitentiary.

Erie County Jail.

KINGSTON — ULSTER COUNTY.— Outdoor public relief is distributed by the Superintendent of the Outdoor Poor.

NEWBURGH — ORANGE COUNTY.— Outdoor public relief is distributed by the Superintendent of the Outdoor Poor.

NEW YORK CITY.— Department of Public Charities and Correction. Office, northwest corner Third avenue and Eleventh street.— Has charge of all the charitable and correctional operations of the city government. The institutions and charities under its charge are given below. All applications for relief of any kind, or for admission to the hospitals, almshouses, asylums and nurseries, and for voluntary commitments to the workhouse, must be made to the superintendent of outdoor poor, at the above office. Commitments for offences and misdemeanors are made by the justices of any district or criminal court in the city. All the institutions immediately following from the Adult Hospital to the Workhouse, are reached or visited only by permits issued by the superintendent of the outdoor poor, from whom the various routes and means of transit may be learned. Apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m.

Outdoor Poor Department, of the Department of Charities and Correction, corner Eleventh street and Third avenue, receives all applications for admission to institutions in charge of the Department of Public Charities and Correction; supplies resident destitute families with coal in winter; distributes the annual appropriations to the poor adult blind; aids sick and destitute non-residents to reach their homes, and furnishes burial for destitute and unknown cases. Apply to William Blake, superintendent; hours from 8 a. m. to 5 p. m.; 129 East Eleventh street.

Adult Hospital, Randall's island. (See class VII, division 1.)

Alms-house, Blackwell's island. (See class V, division 1.)

Alms-house Hospital, Blackwell's island. (See class VII, division 1.)

Asylum for Indigent Blind, Blackwell's island. (See class VI, division 1.)

NEW YORK CITY — (Continued).

Bellevue Hospital, foot of East Twenty-sixth street. (See class VII, division 1.)

Branch City Insane Asylum, Hart's island. (See class VI, division 4.)

Branch City Insane Asylum, Central Islip, L. I. (See class VI, division 4.)

Branch Lunatic Asylum, Hart's island. (See class VI, division 4.)

Branch Work-house, Hart's island. (See class VIII, division 3.)

Bureau of Medical and Surgical Relief for Outdoor Poor, in Twenty-third and Twenty-fourth Wards, 702 Westchester avenue, near Brook avenue. (See class VII, division 6.)

City (late "Charity" Hospital), Blackwell's island. (See class VII, division 1.)

Children's Hospital, Randall's island. (See class VII, division 4.)

City Cemetery, Hart's island. (See class III, division 1.)

City Prisons. (See class VIII, division 2.)

Colored Home and Hospital (organized in 1839), Sixty-fifth street and First avenue.—This is not under the immediate charge but under the general supervision of the department of Public Charities and Correction, but it receives adult destitute, infirm, sick, incurable colored persons of both sexes, and also colored lying-in cases from the department, which pays for their support in the home, and exercises a supervision over them. Apply to William Blake, superintendent outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class V, division 3.)

Emergency Hospital for Women, 223 East Twenty-sixth street. (See class VII, division 4.)

Epileptic Hospital, Blackwell's island. (See class VII, division 2.)

Fordham Reception Hospital, 2456 Valentine avenue. (See class VII, division 1.)

Gouverneur Hospital, Gouverneur slip, corner Front street. (See class VII, division 1.)

NEW YORK CITY — (Continued).

Harlem Reception Hospital and Dispensary, 525 East One Hundred and Twentieth street. (See class VII, division 1.)

Homoeopathic Hospital, Ward's island. (See class VII, division 1.)

Hospital for Incurables, Blackwell's island. (See class VII, division 2.)

Idiot Asylum, Randall's island. (See class VI, division 4.)

Infants' Hospital, Randall's island. (See class VII, division 4.)

Maternity Hospital, Blackwell's island. (See class VII, division 4.)

New York City Asylum for the Insane, Ward's island. (See class VI, division 4.)

New York City Lunatic Asylum, Blackwell's island. (See class VI, division 4.)

New York Morgue (1866), Bellevue Hospital grounds, foot of East Twenty-sixth street.—Open at all hours for the reception of the unknown dead. Bodies kept about seventy-two hours; then buried in city cemetery, if unclaimed. Clothes exhibited thirty days, and if not identified are preserved one year. Photographs, with registered number of the grave, are also kept.

Outdoor Poor Department. (See page 29.)

Paralytic Hospital, Blackwell's island. See class VII, division 2.)

Penitentiary, Blackwell's island. (See class VIII, division 3.)

Branch Penitentiary, Randall's island. (See class VIII, division 3.)

Poor Adult Blind, 129 East Eleventh street (See class VI, division 1.)

Work-house, Blackwell's island. (See class VIII, division 3.)

Work-house Hospital, Blackwell's island. (See class VII, division 2.)

Health Department, 301 Mott street.—The board of health of the health department has supervision of all matters concerning the public health, including sanitary inspections, the

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records of births, marriages and deaths; the care of contagious diseases, vaccination, night medical service, plumbing and drainage of all buildings, ventilation of tenement-houses, and inspection of milk, meats, etc. The board of health appoints fifty physicians every year to visit the tenement-house districts, and care for the poor during the summer months. The following institutions are in charge of the board of health, to whom application for admission must be made:

Night Medical Service. (See class VII, division 8.)

Reception Hospital, foot of East Sixteenth street. (See class VII, division 2.)

Riverside Hospital, North Brothers' island. (See class VII, division 2.)

Willard Parker Hospital, foot of East Sixteenth street. (See class VII, division 2.)

NOTE.—Persons suffering from contagious diseases and needing to be removed should be reported to the nearest police station, with the request to telegraph the information at once to the Health Department, or reported directly to the Board of Health at 391 Mott street, or to the Division of Contagious Diseases, 309 Mulberry street; telephone number, "2 1 Spring."

OSWEGO — OSWEGO COUNTY.—Outdoor Public Relief.

Distributed by the superintendent of the outdoor poor.

POUGHKEEPSIE — DUTCHESS COUNTY.—Outdoor Public Relief. Distributed by the superintendent of the outdoor poor.

TROY — RENSSELAER COUNTY.—Board of Charities. No. 149 River street. Daniel R. Winne, president; John Fleming, superintendent of the poor.

Troy Penitentiary.

Troy House of Industry.

DIVISION 3.—NATIONAL RELIEF.

BROOKLYN — KINGS COUNTY.—United States Naval Hospital. (Opened 1820.) Flushing avenue, opposite Ryerson street. Reached by Sands street and Flushing avenue cars from the bridge. Is a government institution, under the control of the Navy Department, for the treatment of sick and

BROOKLYN — (Continued).

disabled officers and enlisted men of the Navy and Marine Corps of the United States exclusively, who are admitted on presentation of hospital tickets signed by officers authorized to issue them. (It should not be confounded with the "United States Marine Hospital," which see.) Includes a separate accessory hospital or "annex" for contagious diseases within the same grounds. Has 125 beds. Visitors admitted daily from 10 to 4. Albert L. Gihon, M. D., medical director, United States Navy, in charge of hospital. Also within the same grounds (twenty acres) are the naval cemetery, and the naval laboratory, for the supply of medical stores, surgical instruments, etc., to all vessels and shore stations of the navy, the latter being under the direction of Delavan Bloodgood, M. D., medical director.

BUFFALO — ERIE COUNTY.—United States Marine Hospital Service. Founded 1798. Marine Hospital office, Post Office building, Seneca, corner of Washington streets. Maintains the marine wards in the "Buffalo Hospital of the Sisters of Charity" for the care of sick American seamen, who have spent the required number of years in the United States service. Capacity of marine wards, thirty beds. Last year, 427 were admitted to the wards, and 2,000 were treated as out-patients. Supported by the Treasury Department of the United States. W. J. Pettus, officer in charge, to whom apply as above from 9 a. m. to 4 p. m.

NEW YORK CITY.—National Homes for Disabled Volunteer Soldiers. (Incorporated 1865.) General M. T. McMahon, secretary of board of managers. Office, 39 Park Row. Agency for the preparation of blanks and for medical examination of applicants, 23 Centre street. Transportation free. Open to all soldiers and sailors of the United States who served during any war, and who, by reasons of wounds received, disease or old age, are unable to earn a living by manual labor, and are not

NEW YORK CITY — (Continued).

otherwise provided for by existing law. (Homes located near Dayton, O; Milwaukee, Wis; Togus (formerly Augusta), Me; Hampton, Va; Leavenworth, Kan; Marion, Ind; Santa Monica, Cal.

NEW YORK CITY.—United States Immigration Service.— (Created 1890.)—Ellis island, New York harbor; city office, at the Barge Office building, Battery park. Immigrants are received at Ellis island, registered, and sent to destination, usually on day of arrival. Those whose homes will be in New York or vicinity are kept separate until called for by friends. The sick and disabled are detained and sent into its temporary emergency hospital for further examination, and, if necessary, for transfer to one of the contract hospitals until able to be forwarded to their destination. There is a labor bureau attached to the department, where immigrants obtain situations and employers can procure help. Apply to Dr. Joseph H. Senner, United States Commissioner of Immigration; or to E. T. McSweeney, assistant commissioner, at Barge office.

NEW NEW YORK CITY.—United States Marine Hospital Service. Created 1798.—Office at the Battery, east of the Barge office. To furnish medical and surgical relief to sick and disabled seamen of merchant vessels, sailing under United States registry and of the revenue cutter service (not for the United States Marine Corps, for which see United States Naval Hospital). THE MARINE HOSPITAL is at Stapleton, Staten Island. Sixty days' service immediately prior to application for relief is required, unless the applicant is sick or injured in line of duty, when they are admitted irrespective of time service. Capacity for 150 patients. The UNITED STATES MARINE DISPENSARY is at the Battery. Controlled by a surgeon-general, U. S. M. H. S., Washington, acting under authority of the Secretary of the

NEW YORK CITY — (Continued).

Treasury and the President. Supported by government tonnage on foreign imports. John Godfrey, M. D., surgeon in command. Apply at the office, Battery, from 9 a. m. to 3 p. m.

NEW YORK CITY.—United States Pensions are granted, under legal conditions, to ex-United States soldiers and sailors, their widows and children. Application can be made to the Commissioner of Pensions at Washington, D. C.; but, in view of the legal restrictions, should be made through a responsible attorney or claim agent. Agency in New York city, exclusively for payment of pensions, 398 Canal street; Frank C. Loveland, United States Pension Agent.

CLASS III.

TEMPORARY RELIEF OF DISTRESS.

(Including Relief to Foreigners.)

It should be borne in mind by those seeking the proper sources of relief in any case, that

First.—Parents are legally bound to maintain their dependent children, and children to maintain their dependent parents; and such relatives may be directed by a court of competent jurisdiction, in its discretion, to contribute according to their several abilities.

Second.—All religious congregations make provision for the relief of needy and distressed members of their own parishes. Reference, therefore, may always be made to the relief agencies of the congregation with which the case is affiliated.

Third.—The societies for foreigners' relief (see division 8) make ample provision for temporary relief of persons of their own nationality. Therefore, in case of applications from persons of foreign birth, reference should be primarily made to the society for the relief of the same nationality, if any exist.

Fourth. The following should be referred to the Department of Charities and Correction (see class II, division 2), by whom provision is made for them: Vagrants and tramps, drunkards, insane, idiotic, helpless, blind, friendless old people, sick, homeless mothers and infants, and all other helpless, hopeless and friendless cases.—“New York Charities’ Directory.”

The Charity Organization Societies endeavor to obtain for deserving cases, from the proper charities and charitable individuals, suitable and adequate relief of all kinds named in the following divisions. (See pages 1 to 14.)

DIVISION I.—CHARITABLE RELIEF (INCLUDING BURIALS, CLOTHING FOOD, FUEL, MONEY, SHELTER AND LODGING, TRANSPORTATION, ETC.).

ALBANY—ALBANY COUNTY.—Children’s Friend Society of the city of Albany. No. 113 Beaver street. (See class III, division 3.)

BINGHAMTON—BROOME COUNTY.—Binghamton Bureau of Associated Charities. (See class 1.)

BROOKLYN—KINGS COUNTY.—Brooklyn Association for Improving the Condition of the Poor. Incorporated October 20, 1864, under the General Statute. Organized in 1843. Office, No. 104 Livingston street; branch office, 407 Throop avenue.—For the elevation of the moral and physical condition of the indigent; and, as far as is compatible with these objects, the relief of their necessities. Relief is given to the worthy poor temporarily in distress, irrespective of creed, color or nationality, after an investigation of each case; the whole aim of the association being to help those who strive to help themselves. Ten thousand nine hundred and twenty-six families, and 49,167 persons were assisted last year. Controlled by a board of managers. Supported by annual subscribers, voluntary contributions and by an appropriation from the excise fund. A. D. Wheelock, president, 161 Joralemon street; vice-presidents, C. T. Christensen, Cornelius D. Wood, John Claffin, Anton A. Raven; John A. Nexsen, recording secretary, 381 Grand avenue; Samuel Rowland,

BROOKLYN — (Continued).

treasurer, 79 Willow street; Albert A. Day, corresponding secretary and general agent, to whom apply at 104 Livingston street.

Brooklyn Benevolent Society, No. 84 Amity street. (See class V, division 2.)

Brooklyn Bureau of Charities, No. 69 Schermerhorn street. Food and shelter for men and women. (See class 1.)

Brooklyn Children's Aid Society, general offices, No. 61 Poplar street. Provides food, shelter and lodging. (See class III, division 3.)

Brooklyn Industrial School Association and Home for Destitute Children, Sterling place, near Vanderbilt avenue. Provides food, shelter and lodging. (See class III, division 3.)

Brooklyn Society for the Prevention of Cruelty to Children, No. 105 Schermerhorn street. (See class IV, division 3.)

Brooklyn Training School and Home for Young Girls, No. 336 Fourteenth street, near Sixth avenue. (See class III, division 5.)

Christian Rescue Temperance Union. Incorporated in August, 1882. The rooms are at Fifth avenue and Eighth street.—To rescue the perishing, and to encourage both old and young to resist and overcome temptation, to reach out the helping hand to those in distress, and to gather in and instruct the young in all good principles. Assists all classes of poor who are worthy of relief and evince a determination to reform. Over 4,000 people aided last year. Controlled by a board of directors. Supported by collections, subscriptions, and a small appropriation from city funds. B. C. Raymond, president, 198 Flatbush avenue; Albert Lyman, financial secretary, Sixteenth street and Ninth avenue; Etta Pettit, financial secretary, 272 Tenth street; Mrs. J. Duer, superintendent and treasurer, 450 Ninth avenue, to whom apply, or to the officer in charge at above address.

Hebrew Benevolent Association of Brooklyn, eastern and western districts. Incorporated January 16, 1872, under the general statute. The western district maintains no

BROOKLYN — (Continued).

office, as the beneficiary work is accomplished through its officers and relief committee; eastern district office, 93 South Ninth street.—To give charity by the establishment of a well-regulated system of relief, among the worthy and needy Jewish poor of the western and eastern districts of Brooklyn; to provide medical attendance, and medicines to the sick and poor, to bury their dead, and to help the widows and orphans. Two hundred and fourteen families consisting of 907 persons were assisted in the western district last year. Controlled by a board of trustees. Supported by dues of members and by voluntary contributions. Officers of the western district: Harry Maune, president, 346 Union street; L. Blumenau, vice-president, 161 Smith street; H. H. Rothschild, secretary, 60 Berkeley place; G. Merzbach, treasurer, 446 Pacific street. Officers of the eastern district: Moses Kessel, president; M. Hessberg, secretary. Apply to any member of the relief committee residing the nearest to the applicant for relief.

Helping Hand of Brooklyn. No. 136 Lawrence street. Shelter and lodging. (See class VIII, division 1.)

Holy Innocent's Union. Incorporated December 6, 1889, under the general statute. Institution opened 1885. Nos. 112 and 114 Warren street.—For benevolent and charitable purposes; the education of poor children from 3 to 5 years of age, and to relieve worthy working parents from the care of the same during certain hours of the day, and to provide suitable clothing and meals for such children. Unsectarian. Capacity for 500. Average number of children cared for daily, 334. Controlled by a board of managers and solicitors. Supported by private charity and excise money. Officers—Mary A. Prendergast, 402 Henry street; Mrs. Joseph Slevin, 442 Henry street; Bessie Dainly, 133 Harrison street; Adelaide Gaffney, 375 Clinton street; Miss Mary A. Laughlin, Harrison street. Apply to the superintendent of the institution, or to any of the officers.

Industrial School Association of Brooklyn, E. D. Nos. 141 to 153 South Third street. (See class III, division 3.)

BROOKLYN — (Continued).

Ladies' Aid Association. No. 69 Dupont street. (No information has been received from this society.)

Ladies' Benevolent Association of Greenpoint. Seventeenth ward. (See class V, division 3.)

Sailors' Coffee-House Company, Limited. Formerly at 241 York street. To provide food and lodgings to sailors and others. Average number assisted annually, about 6,000. Unsectarian. (This information was copied from a directory, as letter of inquiry was returned unopened, marked "not found.")

St. Peter's Home for Working Girls. Nos. 102 to 112 Congress street. Food, shelter and lodging. (See class III, division 5.)

St. Phoebe's Mission. DeKalk avenue, near Fort Greene. (See class VII, division 8.)

St. Vincent's Home of the City of Brooklyn. No. 7 Poplar street. (See class V, division 2.)

Society for the Relief of Friendless Women and Children. No. 20 Concord street. (See class III, division 6.)

Society of St. Vincent de Paul, Particular Council of Brooklyn. Not incorporated separately. Organized in Brooklyn, January 10, 1855. Council rooms, 7 Poplar street, and connected therewith are thirty conferences, the objects of which are to visit and relieve the poor, to instruct poor children in Christian religion and to undertake any charitable work that the financial condition of the society will permit. Any worthy poor family or individual is cared for irrespective of sex or creed. Fourteen hundred and sixty-four families, embracing 6,657 persons, were relieved, and 17,660 visits were made by members to poor families last year. Controlled by a council of officers of the conferences. Supported by donations and subscriptions from members and others, and from poor boxes in the churches. Rev. P. J. McNamara, spiritual director; 30 Debevoise place; Thos. W. Hynes, president, 503 Willoughby avenue; Thos. P. Mulligan, vice-president, 16 Court street; C. J. Dellahunt, secretary, 127 Vanderbilt avenue; Alfred J. Hook, assistant secretary, 530 Carlton avenue;

BROOKLYN — (Continued).

Patrick O'Connor, treasurer, 40 North Elliott place. Apply to any member at any time, or to the pastor of any Catholic church. The following are the conferences, which have each their board of officers:

St. James.—Meets at 7.30 p. m. in basement of St. James' Cathedral.

Assumption.—Meets Tuesday at 8 p. m. in the Assumption Literary Institute.

St. Mary, Star of the Sea.—Meets Monday at 7.30 p. m. in basement of Little Chapel.

St. Mary of the Immaculate Conception.—Meets Tuesdays at 8 p. m. in vestry of church.

Our Lady of Mercy.—Meets Monday at 7.30 p. m. in the school.

St. Joseph.—Meets Wednesday at 8 p. m. in rooms, 677 Dean street.

St. Charles Borromeo.—Meets Monday at 7.30 p. m. in St. Charles Borromeo's Hall.

St. Patrick.—Meets Monday at 7.30 p. m. in St. Patrick's Academy.

St. Paul.—Meets Tuesday at 8 p. m. in the basement of the church.

St. Anthony.—Meets Monday at 8 p. m. in basement of church.

St. Peter.—Meets Tuesday at 7.30 p. m. in the vestry of the church.

St. John the Evangelist.—Meets Monday at 7.30 p. m. in basement of church.

St. Stephen.—Meets on Tuesday at 8 p. m. in St. Stephen's School.

St. John the Baptist.—Meets Wednesday at 8 p. m. in St. John's College.

Nativity.—Meets 7.30 p. m. in sacristy of church, Classon avenue and Madison street.

Sacred Heart.—Meets Wednesday at 7.30 p. m. in parochial residence, 41 Adelphi street.

St. Augustine.—Meets Thursday at 8 p. m. in the basement of church.

BROOKLYN — (Continued).

St. Michael.—Meets Monday at 8 p. m. in St. Michael's Hall.

Visitation.—Meets Monday at 8 p. m. in the school-room.

Transfiguration.—Meets Monday at 8 p. m. in room over vestry.

St. Anne.—Meets Wednesday at 7.30 p. m. in the basement of

St. Anne's school-house, corner Gold and Water streets.

St. Agnes.—Meets Monday at 8 p. m. in the vestry of church.

St. Mary's, Long Island City.—Meets Monday at 8 p. m. in the vestry of church.

St. Vincent de Paul.—Meets Wednesday at 8 p. m. in basement of church.

St. Michael's, Flushing, L. I.—Meets Sunday at 7 p. m. in the school-house.

St. John's Chapel.—Meets every alternate Friday at 8.30 p. m. in hall of chapel.

St. Ambrose.—Meets Monday at 8 p. m. in vestry of church.

St. Francis de Sales.—Meets Friday at 8 p. m. in school hall.

St. Teresa.—Meets Sunday at 3 p. m. in vestry of church.

St. Francis Xavier.—Meets Tuesday at 8 p. m. in basement of church.

Williamsburgh Benevolent Society.—Incorporated December 31, 1881, under the general statute. Organized October, 1872. Nos. 61 to 65 Meserole avenue.—To render relief and assistance to the worthy and deserving poor of the Eastern District of Brooklyn, widows with families and families in immediate need. Unsectarian. About 1,200 persons were helped last year with groceries, coal, shoes, clothing and money, after each case was thoroughly investigated. Controlled by board of officers and managers. Supported by members' dues, donations and appropriations from excise fund. Henry E. F. Voigt, president, 48 Lee avenue; M. F. Lindhorn, vice-president, 103 Grove street; A. Dietrich, recording secretary, 14 Belvidere street; Ernst A. Henle, corresponding secretary, 329 South Fifth street; Henry Roeber, treasurer, 241 Vernon avenue; J. S. Hein, sergeant-at-arms, 65 Union avenue. Apply every Saturday evening during the regular meetings of the board.

BUFFALO — ERIE COUNTY.—Buffalo Children's Aid Society.

Incorporated March 14, 1883, under the general statute. The Home was opened November, 1882. No. 29 Franklin street.— For the establishment and maintenance of one or more homes or lodging-houses for children of the city of Buffalo; the protection, care, shelter, and saving of friendless and vagrant children, furnishing them with food, raiment and lodging; aiding and administering to their wants; providing them with suitable occupation; instructing them in moral and religious truths, and in the rudiments of education, with such means as the society can properly employ, endeavoring to make them virtuous and useful citizens. Subject to the above organization, and for these objects, is maintained the NEWSBOYS AND BOOTBLACKS' HOME, designed, more especially, for the class of boys named, under 16 years of age, who are received on condition of good behavior and willingness and earnest industry to pay a very moderate charge for the board, lodging and care provided for them in the home, and for their interest and advancement an evening school is conducted. In addition, care and relief are rendered to homeless and wandering waifs — boys, girls or women — to whom the home is open day or night. Capacity of home for seventy-five. Average number of inmates, thirty-five. During the year, over 100 women, girls and babies were received and cared for independent of homeless boys. Controlled by a board of trustees and a board of directresses. Supported by donations, voluntary contributions, and charges for inmates' lodging and board. S. S. Guthrie, president; Millard S. Burns, secretary; E. A. Rockwood, treasurer, of board of trustees. Mrs. Seth P. Bliss, president; Mrs. Allen, secretary; Miss Morris, treasurer, of board of directresses; J. B. Holmes, superintendent, to whom apply at the home for accommodations, at any time of the day or night, in person, or through a friend.

Buffalo Society for the Relief of the Poor. Incorporated by special act, chapter 307, Laws of 1852, and associated with "The Buffalo City Dispensary," incorporated in 1859, under

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the general statute. (See class VII, division 6.) — These societies, which were organized in 1847 and 1852, respectively, have become largely supplemented by the various later charitable organizations, societies, associations, hospitals and city relief, through the poor department and State aid. The united object is for the relief and aid of such poor who endeavor to help themselves and are temporarily in need. Gratuitous treatment is given at the dispensary to the sick and indigent, who, when they are able, pay a small sum for medicines. There are thirteen trustees, who are trustees of each society, and who are authorized to use to the best advantage the incomes from the invested funds, of which the relief society has about \$5,000, and the dispensary \$1,500. Leon F. Harvey, president; Oscar Cobb, secretary, 37 Church street, and William James Ford, treasurer, of the relief society. Ellis Webster, secretary, 308 Main street, and Daniel Beard, treasurer, of the dispensary board. Apply to the officers at any time.

City Poor Relief Department.

ELMIRA — CHEMUNG COUNTY.—Elmira Industrial School Association.—East Church street. (See class III, division 3.)

LOCKPORT — NIAGARA COUNTY.—Charity Organization of the City of Lockport.—Corner of Locust and Main streets. (See class I.)

NEWBURGH — ORANGE COUNTY.—Hebrew Benevolent Society.—No answer has been received.

Jewish Ladies' Aid Society.—No answer has been received.

NEW YORK CITY.—Achnosath Orchim Association.—No. 210 Madison street. (See class III, division 8.)

Ahawath Chesed Sisterhood of Personal Service.—Incorporated 1892, under the general statute. Organized May, 1890. No. 7 East Third street.—For the maintenance of a relief bureau for the sick and needy, and an employment bureau for deserv-

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ing Hebrews, after personal investigation by the visiting committee; and a day nursery and kindergarten, which accommodates thirty-five children; 500 beneficiaries last year. Controlled by a board of managers. Supported by membership dues and voluntary contributions. Rebecca Kohut, president, 39 Beekman place; Mrs. I. Stein, vice-president, 71 East One Hundred and Tenth street; Frances Stein, secretary, 5 Mitchell place; Laura Engel, treasurer, 1466 Lexington avenue. Apply at any time, especially Thursdays from 8 a. m. to 12 m., at 71 East Third street.

American Female Guardian Society and Home for the Friendless.—Incorporated April 6, 1849, under the General statute. Amendatory act passed May 14, 1881. Organized in 1834. Nos. 32 East Thirtieth street and 29 East Twentyninth street. It aims:

First. To rescue from degradation, physical and moral, the children of want, homelessness and sorrow, wherever found, who may be committed to the society in accordance with its charter; and, after a suitable probation in their institution, to learn for what they are best adapted, etc., to secure for them permanent country homes in Christian families.

Second. To reach as many as possible of this same exposed class of children, who, though prevented by surrounding circumstances, from becoming home beneficiaries as inmates, may, nevertheless, be withdrawn from the education of the city street, taught habits of industry, and propriety of conduct, the knowledge of the Bible, etc., and surrounded by influences that may be protective and saving. More than 2,000 of this class daily receive food, raiment and watchcare through the agency of the society, in its industrial schools, while those transiently assisted in the same way amount to many hundreds.

Third. To afford a place and means of protection for destitute young women within the age and circumstances of temptation, without employment, friends, or home.

Fourth. To aid and encourage destitute widows with small

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children, to avoid a separation as long as practicable, by furnishing apparel, bedding, etc., at discretion, securing remunerative employment, as far as can be obtained, and also to admonish the unwary of the moral pitfalls that often abound in the pathway of the lowly.

Fifth. To use the press to enlist the public mind in behalf of the several classes and objects above named.

The worthy poor and sick are visited, and relieved, and, when desirable, admission to the hospital is obtained. The House of Industry and Home for the Friendless, at 32 East Thirtieth street, receives homeless children, girls, from 3 to 14, and boys, from 3 to 10 years of age, and cares for them until they can be placed in Christian families. Capacity for 200. Average number of inmates, 170. The WRIGHT MEMORIAL HOME, at Oceanport, N. J., is designed as a retreat for little ones who are rescued from cruelty of parents or guardians. The home school and twelve industrial schools in various parts of the city, are for children whose parents are too poor to clothe them properly, for the public schools, and they are retained until admission is gained for them in the grammar department of the public schools. The schools are located as follows:

Home School, 29 East Twenty-ninth street.

Industrial School No. 1, 552 First avenue, corner Thirty-second street.

Industrial School No. 2 (Rose Memorial), 418 West Forty-first street.

Industrial School No. 3, 124 West Twenty-sixth street.

Industrial School No. 4, 34 Willett street.

Industrial School No. 5, 220 West Thirty-sixth street.

Industrial School No. 6, 125 Allen street.

Industrial School No. 7, 234 East Eightieth street.

Industrial School No. 8, 463 West Thirty-second street.

Industrial School No. 9, East Sixtieth street and Boulevard.

Industrial School No. 10, 125 Lewis street.

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Industrial School No. 11, Fifty-second street and Second avenue.

Industrial School No. 12, 2247 Second avenue.

The society is controlled by a board of managers. Supported by voluntary contributions and public school fund. Mrs. C. C. North, president; Mrs. A. H. Ambler, corresponding secretary, 107 East Fifty-seventh street; Mrs. Harris Wilson, recording secretary, 150 Lexington avenue; Mrs. S. A. Stone, treasurer, 42 West Thirty-sixth street. Apply at any time at the home, 32 East Thirtieth street.

Austrian-Hungarian Hebrew Free Burial Association.—No. 113 Second street. (See class III, division 8.)

Beth-El Society of Personal Service.—Incorporated April, 1891, under the general statute. Organized April, 1890. No. 355 East Sixty-second street.—To furnish to the worthy Jewish poor, residing between East Twenty-third street and East Seventy-sixth street, articles of nourishment and clothing; to give to the poor better and higher ideas on subjects of hygiene, morality and education; to form a kindergarten; to teach sewing, Jewish history, and religion and to ameliorate in every possible way the condition of our Jewish poor. None who are worthy are excluded from the relief department, except those afflicted with contagious diseases. Five hundred and eighty-four beneficiaries and \$3,400 used for relief last year. Controlled by a board of twenty-one directors. Supported by dues from members and patrons, and by voluntary contributions. Rev. R. Grossman, president, 124 East Ninety-second street; Mrs. Henry Rice, first vice-president, 19 East Sixty-sixth street; J. H. Falk, second vice-president, 311 East One Hundred and Twenty-fourth street; Miss A. Abrahams, recording secretary, 209 East Sixty-fifth street; Miss E. Holzinger, corresponding secretary, 63 East Eighty-seventh street; A. J. Bache, treasurer, 114 East Seventy-ninth street. Apply by mail to the president, Rev. R. Grossman, at 355 East Sixty-second street.

Catharine Mission. Incorporated ——. No. 201 South street.—For the spiritual and physical welfare of the masses in the

NEW YORK CITY — (Continued).

neighborhood. Gives temporary relief, also food and clothing in sickness, and assists in procuring suitable employment for applicants. Unsectarian. Maintains also a Helping Hand for Mothers every Thursday and a sewing class for children on Saturdays. Supported by voluntary contributions. Apply to Miss M. A. Delany, superintendent, from 9 to 11 a. m., or any evening. [Copied from the "New York Charities' Directory," as no reply has been received.]

Children's Aid Society (The). United Charities Building, Fourth avenue and Twenty-second street. (See class III, division 3.)

Children's Charitable Union.—No. 70 Avenue D. (See class III, division 3.)

Christian Aid to Employment Society.—50 Bible House, Eighth street and Fourth avenue.—Occasionally gives relief in very necessitous cases. (See class III, division 2.)

City Cemetery (Hart's Island), Department of Public Charities and Correction, for the interment of such persons as are buried at the public expense. Disinterments may be made on a permit from the Board of Health, indorsed by the Department of Public Charities and Correction. Apply to Wm. Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

Department of Public Charities and Correction.—Supplies fuel in very necessitous cases. (See class II, division 2.)

Down-town Relief Bureau of Trinity Church Association, incorporated in 1887. Organized in 1882. No. 209 Fulton street.—Affords general outdoor relief, also meals and lodgings to the worthy poor, especially to those living below Grand street. Transportation and employment are also provided. No distinction is made as to color, race or creed. Supported by voluntary contributions. Gilbert C. Hebbard, superintendent, to whom apply from 1 to 4 p. m. at the office, No. 209 Fulton street.

East Side Ladies' Aid Society for Widows and Orphans. Incorporated in 1889 under the general statute. No. 102 Avenue A.—To assist the worthy poor by means of food, coal, clothing,

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and money in necessitous cases. Assisted 110 widows and 150 orphans last year. Controlled by a board of managers. Supported by voluntary contributions. Mrs. Henrietta Wunderlich, president, 102 Avenue A; Mrs. Thomas, vice-president, 59 East Fourth street; Mrs. Pauline Lowenthal, secretary, 81 East Seventh street; Mrs. Sturtz, treasurer, 338 East Sixth street. Apply to any of the officers at any time.

Emanuel Sisterhood for Personal Service. Incorporated May, 1889, under the general statute. Organized February, 1889. Office, 159 East Seventy-fourth street. In connection with and under the auspices of the Temple Emanuel, Forty-third street and Fifth avenue.—For the charitable relief of the sick, needy and friendless, and the industrial training and education of children and working girls; especially those of Jewish persuasion, through the personal attention and visitation of the members of the sisterhood. The work is divided into four sections, viz.: I. Relief for those unable to help themselves. II. General education of the young. III. Working girls' clubs for self-culture. IV. A day nursery and kindergarten. Controlled by a board of trustees, under whose auspices each section governs it. Supported by voluntary contributions. Rev. Dr. Gottheil, president, 681 Madison avenue; Mrs. A. Sheftel, vice-president, 20 East Fifty-seventh street; Rev. Dr. Jos. Silverman, secretary, 112 East Fifty-fifth street; Mrs. Lewis May, treasurer, 21 West Fifty-sixth street. Apply to the president or to the managers of the various sections at the office, as above.

Evangelical Aid Society for the Spanish Work of New York and Brooklyn. Incorporated —————. Organized in 1886. No. 1345 Lexington avenue.—To carry the gospel to the Spanish-speaking people in their own language; to provide missionaries to visit their homes; to relieve their sick and help their poor, and to establish Sabbath and industrial schools. Undenominational. Controlled by a board of managers. Supported by voluntary contributions. Mrs. M. Stewart Brown, president; Mrs. S. E. Holt, secretary; Mrs.

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J. N. Nilsen, treasurer; Miss Caroline M. Strong, founder, superintendent and missionary, to whom apply at No. 1345 Lexington avenue.—Copied from the "New York Charities' Directory," as no reply has been received.

Five Points House of Industry. No. 155 Worth street. (See class III, division 5.)

Free Burial Fund Society of the Congregation Darech Amuno. No. 128 Second avenue. (See class III, division 8.)

Free Home for Destitute Girls. No. 23 East Eleventh street.—Provides shelter and lodging. (See class III, division 5.)

French Benevolent Society of the City of New York. Nos. 320 and 322 West Thirty-fourth street.—Provides food, shelter and lodging to Frenchmen and their families in need. (See class III, division 8.)

French Benevolent Society of the Ladies of St. Vincent de Paul. (See class III, division 8.)

German Ladies' Society for the Relief of Destitute Widows, Orphans and Sick Persons (Deutscher Frauen-Verein Zur Interstutzung Hilfsbedürftiger Witmen, Waisen und Kranken). Incorporated April 6, 1860, under the general statute. Meets monthly at Liederkrantz Hall, Fifty-eighth street, between Park and Lexington avenues.—To give general relief to worthy poor German widows with small children, and helpless orphans. Also supplies medicine and medical treatment to destitute aged and sick women, and persons of German birth. Five hundred and ten families and single women were benefited last year. Controlled by a board of officers and the visitors of the society. Supported by voluntary contributions, dues of members and interest of permanent fund. Mrs. Helene Pupke, president, 150 West Fifty-seventh street; Miss K. Beyer, vice-president, 205 Second avenue; Miss Eugenia Von der Emde, recording secretary, 56 East Ninety-second street; Miss Marianne Schurz, corresponding secretary, 175 West Fifty-eighth street; Miss Mary A. Robinson, treasurer, 353 West Fifty-sixth street. Apply to

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any of the officers, or to the district visitors, at their residences.

Grand Army of the Republic.—Room 4, basement of City Hall.
(See class IV, division 2.)

Hebrew Benevolent Fuel Association. Incorporated 1849, under the general statute. No. 128 Second avenue.—A constituent of the United Hebrew Charities, which is the medium of the association in distributing fuel to deserving Jewish poor. Two hundred and fifty tons of coal given last year. Controlled by a board of directors. Supported by members' dues, etc. I. S. Isaacs, president; N. Warner, secretary; Samuel Weil, treasurer. Apply to the office of the United Hebrew Charities, at 128 Second avenue.

Hebrew Free School Association of the City of New York.—Hebrew Institute, East Broadway and Jefferson street. (See class III, division 3.)

Hebrew Relief Society.—Incorporated by special act, ————— eleventh, 1831, under the title of "Society for the Education of Poor Children and Relief of Indigent Persons of the Jewish Persuasion in the City of New York." Name changed to present title by special act, November 4, 1860. An act to consolidate the "Hebrew Relief Society" and "Hebrew Female Benevolent Society of the Congregation Shearith Israel of the City of New York" into one society, as "The Hebrew Relief Society," was passed May 2, 1870. This society is a constituent of the United Hebrew Charities and under its auspices, dispenses relief to worthy Jews in distress, and maintains a few pensioners among the congregation of Shearith Israel synagogue. One hundred and twenty-five beneficiaries last year. Controlled by a board of managers. Supported by members' dues and voluntary contributions. Henry S. Allen, president, 259 West Forty-fifth street; Solomon Seixas, vice-president, 356 West Fifty-eighth street; Abraham H. Seixas, secretary, 38 West Twenty-third street; Julian Nathan, treasurer, 97 Fifth avenue. Apply at the office of the United Hebrew Charities, No. 128 Second avenue.

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Home for Fallen and Friendless Girls (Wetmore Home).— Nos. 49 and 50 South Washington square.— Provides food, shelter and lodgings to women and young girls. (See class VIII, division 5.)

Home of Industry and Refuge for Discharged Convicts.— No. 224 West Sixty-third street.— Food, shelter and lodging. (See class VIII, division 4.)

Howard Mission and Home for Little Wanderers.— Incorporated September, 1865, under the general statute. Organized June, 1861. Mission house, 206 Fifth street.— Aids poor, neglected, helpless and homeless children and poor worthy families among the poor, irrespective of race or color, by providing clothing, food, temporary shelter, personal visitations and ministrations to the sick, and assistance in providing employment, also intellectual, moral and religious instructions to these under its care. Over 460 families, including 1,792 children, benefited last year. Controlled by a board of trustees. Supported by voluntary contributions and bequests. A. S. Hatch, president and treasurer, 15 Cortlandt street; J. F. Wyckoff, secretary, 7 Pine street; Joseph Hague, agent (P. O. box 3,323), to whom apply in person, or to the missionary in charge, at the mission rooms, 206 Fifth street, from 9 a. m. to 5 p. m.

Industrial Christian Alliance. No. 113 Macdougall street. (See class III, division 2.)

Italian Home (Istituto Italiano). No. 179 Second avenue. (See class III, division 8.)

Ladies' Bikur Cholim Society of New York City. Incorporated in 1864, under the general statute. Organized 1860. Office and industrial school at No. 177 East Broadway.— To assist sick and needy Hebrews, and to maintain an industrial school for poor girls, from 8 to 12 years of age, who receive an outfit of clothing twice a year from the garments made during training; the rest are distributed among needy applicants and families. No class are excluded. Capacity of school for 150. Daily average in attendance, 120 girls. Eighty families

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were assisted last year and 2,467 garments were given away. Controlled by a board of officers. Supported by dues of members, donations and interest on invested funds. Mrs. Emma L. Toplitz, president, 47 East Sixty-eighth street; Mrs. A. Honigman, vice-president, 209 West Seventy-eighth street; Mrs. N. Brandon, secretary, 122 West Seventy-fifth street; Mrs. Sarah Neustaetter, treasurer, 149 East Nintyeth street. Apply to the president at her residence.

Ladies' Fuel and Aid Society. Incorporated August 7, 1888, under the general statute. Organized January 8, 1888. No. 199 Henry street. To assist the poor and needy by furnishing them with fuel, food, clothing, shelter and other necessities, and to perform such other benevolent and charitable acts as may be specified and prescribed by the constitution. The suffering poor of any class, or creed, are relieved and assisted to secure employment, when proved to be worthy and deserving. Over 1,000 families cared for annually. Controlled by a board of directresses. Supported by members' dues and by voluntary contributions. Mrs. L. Hershfield, president, 199 Henry street; Mrs. N. Jacobs, vice-president, 394 Grand street; Miss Sophie Himowich, secretary, 35 Orchard street; Mrs. J. Cohen, treasurer, 205 East Broadway. Apply to the president, as above.

Ladies' Helping Hand Association of the City of New York. No. 160 West Twenty-ninth street. (See class III, division 2.)

Loan Relief Association. Provides fuel. (See class IV, division 1.)

Louis Down-Town Sabbath and Daily School. No. 267 Henry street. (See class III, division 3.)

Lutheran Pilgrim Home of the Emigrant Mission Committee of the German Evangelical Synod, etc. No. 8 State street, (See class III, division 8.)

McCauley Water Street Mission. (Opened 1872.) Incorporated 1876. 316 Water street, near Franklin square.—To reclaim the most vicious and degraded men and outcasts

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of society, drunkards and criminals, by first administering, when necessary, to their temporary relief, then by moral and spiritual counsel and assistance. It is not a home where men can be lodged, but the most needy are helped, and respectable and comfortable places are provided for them. Open from 7 a. m. to 10 p. m. Services are held every evening. Controlled by Board of trustees and superintendent. Supported by voluntary contributions. A. S. Hatch, president; B. DeF. Curtiss, secretary; R. Fulton Cutting, treasurer; J. Frederick Talcott, J. S. Morgan, J. H. Boswell and John H. Huyler, trustees; S. H. Hadley, superintendent, to whom apply at any time at the mission.

Mission of the Immaculate Virgin for the Protection of Homeless and Destitute Children. Lafayette place, corner of Great Jones street. (See class V, division 2.)

New York Association for Improving the Condition of the Poor.—Incorporated April 12, 1848, under the general statute. Organized in 1843. Central office, United Charities building, Fourth avenue and Twenty-second street; Harlem branch, No. 58 East One Hundred and Twenty-fifth street.—For the elevation of the moral and physical condition of the indigent, and as far as is compatible with this, the relief of their necessities. Its specific objects are as follows, and affect the laboring classes and the worthy poor, who strive to be self-supporting:

First.—To see that all deserving cases of destitution are promptly relieved.

Second.—To provide adequate fresh air benefits for the working classes who can not supply them for themselves.

Third.—To supply hot and cold water baths for the people at convenient localities and small cost.

Fourth.—To elevate the home life, health and habit of the poor.

Fifth.—To make employment the basis of relief.

Sixth.—To reduce vagrancy and pauperism, and ascertain their true cause.

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Seventh.—To prevent indiscriminate and duplicate almsgiving.

Eighth.—To secure the community from imposture, and

Ninth. To improve the sanitary condition of the dwellings of the poor.

Controlled by a board of twenty-six managers, and an executive committee of eight members. Supported by voluntary contributions. Thirty-seven thousand six hundred and twenty-six beneficiaries last year. John Paton, president, 52 William street; W. R. Huntington, D. D., 804 Broadway; R. Fulton Cutting, 32 Nassau street; Henry E. Crampton, M. D., 256 West One Hundred and Twenty-first street; James A. Scrymser, 107 East Twenty-first street; William G. Hamilton, 105 East Twenty-first street, vice-presidents; George Calder, secretary; John L. Cadwalader, counsel to the board; Warner Van Norden, treasurer, 25 Nassau street; Francis S. Longworth, general agent. Apply to either of the offices of the association from 9 a. m. until midnight.

New York Bible and Fruit Mission to Public Hospitals. Nos. 416 to 422 East Twenty-sixth street. (See class IV, division 4.)

New York City Mission and Tract Society, Woman's Branch.

United Charities Building, Fourth avenue and Twenty-second street. (See class VII, division 8.)

New York Colored Mission. Incorporated August 23, 1871, under the general statute. No. 135 West Thirtieth street.—For the religious, moral and social elevation of the colored people. To conduct, in the city of New York, Sabbath schools for religious instruction; social, religious meetings, an evening school for adults, a sewing school, a mother's meeting, an employment office, free reading-room and a temperance society; also to employ missionaries to aid the society in promoting the foregoing objects. At present, in connection with the mission, is an employment office, open daily, to furnish, free of expense, respectable colored persons with situations; a free reading-room and library; a lodging-room for women,

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accommodating forty-five, at a charge of fifteen cents a night; a sewing school, for colored girls and women, every Saturday during the winter; the garments made by the children are given to them, and those made by the women are purchased by them at one-half the cost of materials; a missionary visits the sick and poor, and gives relief in fuel, food and clothing in cases of dire necessity, and, during the summer months, a number of mothers and children are sent into the country for two weeks' outing. Controlled by a board of trustees and a board of managers. Supported by income from employment office and lodging-room, and by voluntary contributions. Joshua L. Barton, president, 57 East Fifty-fifth street; Charles B. Hatch, vice-president, 1081 Boston avenue; Christopher Wray, secretary, 212 East Thirty-second street; Augustus Taber, treasurer, Westchester, N. Y., of board of trustees; Stephen W. Collins, secretary, 69 Wall street, and Samuel B. Wray, treasurer, 212 East Thirty-second street, of board of managers. Apply to the superintendent, at the mission, at all times. —

New York Ladies' Home Missionary Society of the Methodist Episcopal Church (Five Points Mission). No. 63 Park street. (See class III, division 3.)

New York Practical Aid Society. Incorporated September 4, 1891. No. 327 West Thirty-sixth street.—To provide free medical attendance and sick-room supplies, food, clothing and general relief for the worthy poor; also to aid in procuring suitable employment for those able to work. The benefits are more especially for needy women and children who, after investigation, are found to be worthy of assistance. The society, which is unsectarian, does not furnish lodgings, but maintains sewing-schools and educational girls' clubs at its home. During the first year, 800 visits were made to the sick poor, without charge, by the medical officers, in addition to the necessary clothing, food and medicines provided for urgent cases, and to the amount of general relief distributed to about 3,000 beneficiaries. Controlled by a board of trus-

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tees. Supported by voluntary contributions. J. A. Sanders, M. D., president, 351 West Forty-second street; L. J. Ellis, vice-president, 317 Broadway; E. A. MacClean, secretary, 35 Wall street; Charles H. Haynes, treasurer, 41 West Twenty-sixth street; Mrs. Laura A. Goodwin, superintendent, to whom apply, in person or by letter, to the home of the society, 327 West Thirty-sixth street.

New York Press Club. No. 120 Nassau street. Provides free burial for its members. (See class III, division 8.)

New York Protestant Episcopal City Mission Society.—Incorporated by special act, April 9, 1833. Amendatory acts passed March 16, 1866, and March 29, 1884. Office at No. 38 Bleeker street.—For the evangelization of the city. To provide free churches and mission houses for the poor and afflicted, and also to provide suitable clergymen and other persons to act as missionaries, and care for the poor, sick and the outcast. Its ST. BARNABAS' HOUSE, opened in 1866 at 304 and 306 Mulberry street, is a temporary refuge and resting-place, for one week, for destitute and homeless women, because of sickness or adversity, and women discharged from the hospitals cured, but needing rest; all of whom are admitted without regard to creed, race or color; also a temporary home for one month for destitute or homeless children. Capacity for seventy-two. Meals are daily provided gratuitously to destitute women and children, on presentation of a ticket, secured from the general agent of the society. Associated with this home is a dispensary, day nursery, industrial school and training school for women, to qualify themselves for domestic service, and fresh air fund and employment society. Last year 10,821 children were received in the nursery, 68,881 meals given, 17,629 lodgings provided and 1,770 persons cared for in St. Barnabas' House. The society maintains the St. Barnabas' Free Reading-room and Clergy House, at 38 Bleeker street, and owns and conducts several mission chapels in other parts of the city. Daily visits are made to the prisoners in their cells, and to the sick in the hospitals.

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Controlled by a board of trustees. Supported by voluntary contributions. Right. Rev. Henry C. Potter, D. D., LL. D., president, 29 Lafayette place; Charles P. Bull, secretary, Mutual Life Building; Jno. H. Boynton, treasurer and general agent, 38 Bleecker street; Rev. Thomas M. Peters, D. D., superintendent of mission work, 225 West Ninety-ninth street. Apply to the general agent at 38 Bleecker street, or to the missionaries with whom they come in contact, or to the matron at St. Barnabas' House.

Outdoor Poor Department of the Department of Public Charities and Correction.—(See class II, division 2.)

Passover Relief Association.—Incorporated November 24, 1882, under special act of chapters 368 and 369, laws of 1865. Organized 1877.—To assist the poor and needy Israelites, recommended by some responsible person or member, with unleavened bread and groceries for the feast of the Passover. Six hundred and forty families, or 3,900 persons, relieved last year. Controlled by a board of directors and trustees. Supported by dues of members and donations, etc. M. Silberstein, president, 314 East Seventy-ninth street; Sam. Michaels, vice-president, Eighty-sixth street and Third avenue; Mrs. S. Michaels, treasurer, 156 Henry street; Adolph Schwarzbaum, secretary, 772 Third avenue, to whom apply.

Sanitarium for Hebrew Children in the City of New York.—Office, No. 124 East Fourteenth street. (See class VII, division 9.)

St. Barnabas' House.—(See the "New York Protestant Episcopal City Mission Society," in this division.)

St. John the Baptist Foundation.—Mother house, No. 233 East Seventeenth street. (See class III, division 3.)

St. Mary's Lodging-house.—No. 143 West Fourteenth street. (See class III, division 5.)

St. Joseph's Night Shelter of the St. Mary's Lodging-house.—No. 144 West Fifteenth street. (See class III, division 5.)

Shaaray Tefila Sisterhood for Personal Service of Congregation Shaaray Tefila.—Incorporated in 1846. Organized in 1889.

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Office, No. 127 West Forty-fourth street.—The work of the sisterhood is carried on in four departments: First.—It acts as investigating and relieving agents of the United Hebrew Charities of New York on the West Side of the city, from Canal to One Hundred and Twenty-fifth street. Second.—The care of the young, and to this end, maintains a free Kindergarten for poor children from 9 a. m. to 12 m., daily. Third.—It instructs a sewing class for children from 4 to 6 p. m., daily. Fourth. It holds religious classes on the West Side for Jewish children from time to time. Controlled by a board of officers. The work is supported by voluntary contributions, proceeds of entertainments, etc. Rev. Dr. F. de Sola Mendes, president, 163 West Seventy-third street; Mrs. S. B. Solomon, vice-president; Mrs. M. L. Levenson, secretary; Mrs. Edward Goodman, treasurer. Apply to the president or to any of the officers at the office at any time.

Shelter for Respectable Girls.—Nos. 148 and 150 West Fourteenth street.—Provides shelter and lodging to young girls. (See class III, division 5.)

Sisterhood of the Good Shepherd.—No. 419 West Nineteenth street. (See class V, division 2.)

Sisterhood Temple Rodoph Sholom.—Incorporated March 10, 1892, under the general statute. Organized 1891. Corner of East Sixty-third street and Lexington avenue.—To care for the poor, sick and destitute of the vicinity and to work on the same principles as the other sisterhoods. Controlled by a board of directors. Supported by voluntary contributions. Mrs. S. Weinhandler, president, 319 East Seventeenth street, to whom apply at the temple, East Sixty-third street and Lexington avenue.

Sisters of the Poor of St. Francis.—Nos. 603 to 617 East Fifth street. (See class VII, division 1.)

Sisters of the Strangers.—Incorporated April 11, 1884, under the general statute, 4 Winthrop place, Mercer near Eighth street.—To assist strangers and others in this city, who can give some reliable references, affording temporary relief, as

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far as practicable, by giving food, clothing, shelter, medical attendance, legal advice, and such general information as may be needed on the subject of obtaining employment, boarding-houses and churches, and in doing charitable work and ministrations in general, regardless of the nationality, creed, age, sex or color of the applicant. The work is carried on under the auspices of the "Church of the Strangers." Controlled by the board of trustees. Supported by voluntary contributions. Mrs. C. F. Deems, president, New York Hotel; Mrs. E. F. Bemingham, first directress, Dexter, N. Y.; Mrs. M. E. Ogden, second directress; Miss C. Sturtevant, secretary and treasurer, to whom apply at the office week-days, from 3 to 5 p. m.

Society for Befriending Self-supporting Women. No. 358 West Thirty-third street. Gives shelter and lodging to respectable women. (See class III, division 6.)

Society for the Relief of Poor Widows with Small Children (The). Incorporated by special act in 1802. Organized in 1798.—To aid without regard to nativity or creed, any industrious poor widow of good character, with two children or more under 12 years of age, who is not assisted by the authorities. Districted from Beekman to Sixtieth streets. Applicants are visited before they are assisted, and work is suspended during the summer. Relief was given to 395 widows with 985 small children last year. Controlled by a board of officers and managers, with an advisory committee of gentlemen. Supported by voluntary contributions and by an invested fund: Mrs. Wm. Preston Griffin, first directress, 208 East Fifteenth street; Mrs. Matthew Clarkson, second directress, 15 West Forty-fifth street; Mrs. George Macculloch Miller, third directress, 270 Madison avenue; Miss Margaret A. Jackson, secretary, 556 Madison avenue; Mrs. Theodore B. Bronson, treasurer, 107 East Twenty-fifth street; Miss Rachel Boyd, agent, 202 West Forty-first street. Apply to any of the directresses or managers.

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Society of St. Vincent de Paul in the City of New York. Incorporated April 10th, chapter 197, Laws of 1872. Has for its objects: First. The practice of a Christian life. Second. To visit the poor at their dwellings and to carry them succor in kind. Third. To promote the elementary and religious instruction of poor children. Fourth. To distribute moral and religious books. Fifth. To undertake any other charitable work to which their resources are adequate. Its headquarters are in Paris.

Superior Council of New York (The). (1860.) Is located in New York city, and has the circumspection of all the particular councils in the United States, one of which supervises the work in each diocese. The superior council meets at the office, 2 Lafayette place, on the Wednesday after the first Monday of each month, at 8 p. m. Hours, 8.30 to 5 p. m. Rt. Rev. Mgr. John M. Farley, D. D., spiritual director; Jeremiah Fitzpatrick, president; Thomas M. Mulry, secretary; Philip H. Shelley, treasurer.

Particular Council of New York (The). (Organized 1857, incorporated 1872.) Has circumspection of all the fifty-two conferences in the archdiocese of New York. It meets in the Cathedral school-house, 111 East Fiftieth street, on the second Monday of each month, at 8 p. m. Office, 2 Lafayette place. Rt. Rev. Mgr. J. M. Farley, D. D., spiritual director; Jeremiah Fitzpatrick, president; 80 North Moore street; John Haigney, secretary, 49 Hick street, Brooklyn; William P. Byrne, treasurer, 345 West Fifty-first street.

Conferences.—Nearly all the Roman Catholic churches in the city have a separate conference and each has its board of officers of the society; the name being usually the same as that of the church, its work being confined among the worthy poor to the parish in which it is situated, and the parish priest being in most cases the spiritual director. Supported by voluntary contributions. Forty-seven hundred and thirty four families were relieved and 36,362 visits were made in

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1891. Applications may be made to him or to the president.

There are fifty-two conferences in New York, as follows:

All Saints, Madison avenue and One Hundred and Twenty-ninth street; Tuesday, 8 p. m. President, Robert McGinnis.

Annunciation, Broadway and One Hundred and Thirty-first street; Wednesday, 8 p. m., basement. President, Hugh McCormick.

Carmelite, East Twenty-eighth street. President, John T. Mooney.

Epiphany, 373 Second avenue; Tuesday, 8 p. m., chapel. President, James Kedian.

Holy Cross, 335 West Forty-second street; Tuesday, 7.30 p. m., church building. President, P. McCullough.

Holy Name, Boulevard and Ninety-seventh street; Sunday, 8 p. m., hall of church. President, John J. Pulleyn.

Holy Rosary, East One Hundred and Nineteenth street; Wednesday, 8 p. m., sacristy. President, William R. Collins.

Immaculate Conception, 505 East Fourteenth street; Tuesday, 8 p. m., vestry. President, Miles Hastings.

Most Holy Redeemer, 165 Third street; Wednesday, 8 p. m., school-house, 222 East Fourth street. President, Barth, Mattes.

Nativity, 48 Second avenue; Tuesday, 8 p. m., basement. President, J. H. Butler.

Our Lady of Mercy, Fordham; Sunday 12 m., pastoral residence. President, Michael Reidy.

Our Lady of Sorrows, 105 Pitt street; Friday, 8 p. m., school-house. President, Francis S. Stehle.

Sacred Heart, 447 West Fifty-first street; Tuesday, 8 p. m., pastoral residence. President, Dennis Ahern.

St. Agnes, 143 East Forty-third street; Friday, 8 p. m., pastoral residence. President, James F. J. Donohoe.

St. Alphonsus, 230 South Fifth avenue; Tuesday, 8 p. m., pastoral residence. President, Maurice Ahern.

St. Andrew, Duane street and City Hall place; Tuesday, 8 p. m., basement. President, Thomas J. Sullivan.

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- St. Ann, 118 East Twelfth street; Tuesday, 8 p. m., school-house, Eleventh street. President, D. E. Scannell.
- St. Anthony, 149 Sullivan street; Tuesday, 7.30 p. m., school-house, 60 Macdougall street. President, Jno. O'Connor.
- St. Bernard, 332 West Fourteenth street; Tuesday, 7.30 p. m., Baptistry. President, Thomas M. Mulry.
- St. Boniface, 312 East Forty-seventh street; Wednesday, 8 p. m., school-house. President, Nicholas Schmidt.
- St. Bridget, 123 Avenue B; Tuesday, 7.30 p. m., school-hall. President, P. J. McCue.
- St. Cecilia, Tuesday, 8 p. m., hall, One Hundred and Sixth street, Lexington and Fourth avenues. President, Francis McMullen.
- St. Columbia, 339 West Twenty-fifth street; Thursday, 8 p. m., school-hall. President, Thomas J. Logan.
- St. Elizabeth, Fort Washington; Sunday, 12 m., basement. President, Edward J. Crowley.
- St. Francis Xavier, 36 West Sixteenth street; Tuesday, 8 p. m., college hall. President, Dr. Alfred V. Brailley.
- St. Gabriel, 312 East Thirty-seventh street; Tuesday, 8 p. m., school-room, Thirty-sixth street. President, James F. Boyle.
- St. Ignatius, East Eighty-seventh street; Tuesday, 8 p. m., school building, East Eighty-seventh street. President, Peter Wolf.
- St. James, 32 James street; Tuesday, 7.30 p. m., basement. President, William Brett.
- St. Jerome, Alexander avenue and One Hundred and Thirty-seventh street; Tuesday, 8 p. m., pastoral residence. President, Walter W. Tinsley.
- St. John the Baptist, 209 West Thirtieth street; Thursday, 8 p. m., convent, Thirty-first street. President, John Brahm.
- St. John the Evangelist, First avenue and Fifty-fifth street; Tuesday, 8 p. m., in the church. President, James W. Castle.
- St. Joseph, Sixth avenue and Washington place; Sunday, 1 p. m., basement of church. President, John C. McCarthy.
- St. Joseph One Hundred and Twenty-fifth street and Ninth avenue; Friday, 8 p. m., pastoral residence. President, Chas. P. Gautier.

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St. Lawrence, Eighty-fourth street, near Fourth avenue; Tuesday, 8 p. m., school-hall. President, Thomas Falvey.

St. Mary, 438 Grand street; Tuesday, 8 p. m., room under vestry. President, Jno. Swanton.

St. Mary Magdalen, 525 East Seventeenth street; Sunday 8 p. m., at parochial school-house. President, Frank Vetter.

St. Michael, 408 West Thirty-second street; Tuesday, 7.45 p. m., pastoral residence, 383 Ninth avenue. President, Edward Fitzpatrick.

St. Monica, East Seventy-ninth street, corner First avenue; Tuesday, 8 p. m., school-house. President, C. J. Kane.

St. Nicholas, 125 Second street; Thursday, 8 p. m., basement. President, Jno. G. Roesch.

St. Patrick, Prince and Mott streets; Tuesday, 8 p. m., school-hall. President, Wm. Keohane.

St. Patrick (Cathedral), Fifth avenue and Fiftieth street; Thursday, 8 p. m., school-house, Fiftieth street. President, Thomas Roach.

St. Paul, 121 East One Hundred and Seventeenth street; Tuesday, 8 p. m., school-room. President, Wm. Turbridgy.

St. Paul in St. Peter's, 22 Barclay street; Tuesday 7.30 p. m., basement. President, Jno. Quinn.

St. Paul the Apostle, Sixtieth street and Ninth avenue; Tuesday, 7.30 p. m., in convent, Fifty-ninth street and Ninth avenue. President, John J. Coady.

St. Peter, Barclay and Church streets; Tuesday, 7.30 p. m., basement. President, Samuel S. Joyce.

St. Rose of Lima, 42 Cannon street; Sunday, 12 m., at church. President, James Monaghan.

St. Stephen, 149 East Twenty-eighth street; Tuesday, 8 p. m., basement. President, James Aylward.

St. Teresa, Rutgers and Henry streets; Tuesday, 7.45 p. m., school-house, 10 Rutgers street. President, James E. Dougherty.

St. Veronica, Washington street; Monday, 8 p. m., in the school-house. President, Patrick Hart.

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St. Vincent de Paul, 127 West Twenty-third street; Wednesday, 8 p. m., 120 West Twenty-fourth street. President, D. L. A. Cugnard.

St. Vincent Ferrer, Lexington avenue and Sixty-sixth street; Tuesday, 7.30 p. m., basement. President, James Meehan.

Transfiguration, 25 Mott street; Monday, 7.30 p. m., school-hall. President, John Hogan.

Temple Israel Sisterhood. Organized, 1891. One Hundred and Twenty-fifth street and Fifth avenue.—A voluntary association to assist the worthy poor, after personal investigation, among the Israelites of Harlem, and to do such philanthropic work as may be practicable. Controlled by an executive committee. Supported by voluntary contributions. Mrs. D. P. Hays, president, 9 West One Hundred and Twenty-first street; Mrs. A. Levy, vice-president, 1889 Madison avenue; Mrs. E. J. Markewitz, corresponding secretary, 217 West One Hundred and Thirty-fourth street; Mrs. M. H. Harris, recording secretary, 10 East One Hundred and Thirtieth street; Mrs. A. S. Ellison, treasurer, 1893 Madison avenue. Apply at Temple Israel, at the above address.

Temporary Home for Women. No. 84 Second avenue.—Provides cheap meals, lodging and temporary shelter to respectable women and young girls. (See class III, division 6.)

Trinity Church Association. Incorporated in 1887, under the general statute. No. 209 Fulton street.—To carry on charitable work down town, more or less in connection with, but is independent of, the corporation of Trinity church. It maintains the Trinity mission house, at 209 and 211 Fulton street, as the headquarters of work among the poor, where they may apply for relief; the Provident Dispensary, in the basement of the mission house; training school for young girls in household service; a kindergarten and kitchen garden for little girls; a seaside home for children, at Islip, L. I.; and the down-town relief bureau at 209 Fulton street. Controlled by a board of managers. Supported by its members and by voluntary contributions. Rev. Morgan Dix, S. T. D.,

NEW YORK CITY — (Continued).

president; William Bispham, secretary, 131 Washington street; George M. Coit, treasurer, 63 William street.

United Hebrew Charities of the City of New York. Incorporated in 1875, under the general statute, is composed of the following incorporated societies: "Hebrew Benevolent and Orphan Asylum Society;" "Hebrew Benevolent Fuel Society;" "Hebrew Relief Society;" "Ladies' Hebrew Lying-in Relief Society;" and "Congregation Darech Amuno Free Burial Fund Society;" each of which has control of its own affairs. General office, No. 128 Second avenue.—To relieve the worthy Hebrew poor by such aid as may be deemed most appropriate, but seeks to prevent indiscriminate and duplicate giving; to encourage thrift, industry and economy; and to secure the community from imposture, and assists people, who, from age or physical incapacity, are unable to support themselves. It maintains an employment bureau, and finds work for destitute Hebrews; over 4,000 situations obtained for such last year. An industrial school for girls, where instruction is given in sewing, embroidery, and dressmaking. There are also other schools for boys and girls. Over 2,500 lodgings and 8,000 meals were furnished to young men last year. The sick and dying are cared for by the corps of visiting physicians and trained nurses, and transportation to Europe and other parts of the United States is afforded to thousands annually, who are unable to earn a living in or around New York, or wish to return to their native land. Total number assisted during last year, in all departments, 39,916. The following co-operating societies render valuable assistance to the united Hebrew charities in their various efforts to relieve unfortunate Hebrews: "Baron de Hirsch Fund," and the sisterhoods "Emanu-El," "Beth-El," "Ahawath Chesed," "Shaaray Tefila," "Temple Israel," and "Rodoph Sholom." Controlled by a board of managers. Supported by public and voluntary contributions and membership dues from the various societies. Henry Rice, president; Morris Tuska, Benjamin Russak and Henry S. Allen, vice-presidents; I. S.

NEW YORK CITY — (Continued).

Isaacs, secretary; James H. Hoffman, treasurer. Apply to the general superintendent, daily, except Saturdays, from 9 a. m. to 5 p. m., at No. 128 Second avenue.

United Relief Works of the Society of Ethical Culture (The). No. 109 West Fifty-fourth street. (See class III, division 3.)

United Sisters of Congregational Shaarai Zedek. Incorporated. Organized in 1890. Nos. 38 and 40 Henry street.—To give general relief and personal ministration to the worthy poor of the vicinity. Works in connection with the United Hebrew Charities. Over 300 beneficiaries were relieved last year. Controlled by a board of officers. Supported by voluntary contributions and the regular dues of members. Henry Wikowski, president, 65 East One Hundred and Twentieth street; Mrs. S. Goldstein, vice-president, 396 Grand street; Mrs. E. Sobel, treasurer, 148 Henry street; N. Frankel, secretary, 367 Broome street. Apply to the president, or to any of the officers.

Wilson Industrial School for Girls (and Mission). No. 125 St. Mark's place, corner of Avenue A and Eighth street. (See class III, division 3.)

Young Friends' Aid Association. Incorporated in 1890, under the general statute. Organized in 1873. No office.—To engage in benevolent and charitable work in the city of New York, with special reference to providing good clothing, shelter and other necessities for worthy families and individuals in indigent circumstances. Forty-nine families were cared for last year. Controlled by a board of directors. Supported by voluntary contributions. Wm. A. Briggs, president, 102 West Ninety-third street; Mrs. S. Elizabeth Stone, vice-president, Sixteenth street and Rutherford place; Amelia R. Hamil, secretary, 111 East Tenth street; Jos. A. Bogardus, treasurer, 269 West Eleventh street. Apply to any of the officers and members.

Young Men's Christian Association of the City of New York. Incorporated in 1866. General office, No. 40 East Twenty-third street.—Maintains free employment bureaus at Twenty-

NEW YORK CITY — (Continued).

third street and the Bowery branches, for men only. At the latter place, homeless young men of good character, in destitute circumstances, are furnished with free lodgings and food while seeking employment. The association also owns a free bed in the Presbyterian Hospital, and a plot in Woodlawn Cemetery for the burial of young men. Apply to the general or associate secretary at the general office.

Young Women's Society of the French Evangelical Church in the City of New York. No. 341 West Thirtieth street. (See class III, division 6.)

OSWEGO — OSWEGO COUNTY.— Oswego City Mission. Incorporated. No answer has been received.

Shiloh Mission. Incorporated. No information has been received.

Society of Charities and Missions. Incorporated November 27, 1888, under the general statute.—For the prosecution of missionary and charitable work in the city of Oswego, among the poorer classes, who are in need and are without church homes. The work is conducted under the care and direction of a city missionary. Controlled by a board of managers. Supported by voluntary subscriptions. D. M. Irwin, president; J. B. Lathrop, secretary and treasurer; Edward Lee, city missionary, to whom apply.

Young Men's Christian Association. Oswego and Fulton streets. No information has been received.

ROCHESTER — MONROE COUNTY.—Hebrew Ladies' Aid Society. Incorporated March 6, 1870, under the general statute. A constituent of the United Jewish Charities of Rochester, and its work of assisting and relieving the needy Jewish poor, is carried on through that society, upon recommendation of the relief committee. Controlled by a board of officers. Supported by dues of members. Mrs. L. Adler, president, 26 South Clinton street; Mrs. Van Bergh, vice-president, Elm street; Mrs. S. Guggenheimer, secretary, North avenue; Mrs. T. Meyers, treasurer, East avenue. Apply in person to

ROCHESTER — (Continued).

the president, at the Assembly Hall, corner of Gibbs and Grove streets, Tuesday and Thursday of each week.

Hebrew Ladies' Benevolent Society. No information has been received from the officers.

Industrial School of Rochester. No. 133 Exchange street. (See class III, division 3.)

Rochester Female Charitable Society (The). (See class VII, division 8.)

Rochester Hebrew Benevolent Society. Incorporated February 28, 1867, under the general statute.—For the relief of worthy indigent persons and families, in cases of sickness and suffering. Controlled by a board of trustees. Supported by membership dues, and by voluntary contributions. David M. Garson, president; Julius M. Wile, vice-president; Joseph Cauffman, secretary; Simon Adler, treasurer. Apply to the president.

United Hebrew Charities of Rochester. Incorporated ————. No information has been received from this society.

ROME — ONEIDA COUNTY.—Rome Bureau of Employment and Relief. Not incorporated. Organized in 1881. No. 116 Washington street.—To relieve the sick and the deserving poor; to prevent begging and imposture; to obtain employment for persons who are out of work, and to found and support such charitable institutions as are needed in the city of Rome. Relief is given in food and clothing, if upon investigation the applicant is found worthy. Controlled by an executive committee, comprising representatives from the various churches of the city. Supported by voluntary contributions. Mrs. F. A. Ethridge, president; Mrs. Jesse J. Armstrong, first vice-president; Mrs. A. Sandford, second vice-president; Miss Olive D. West, secretary; Miss Jennie Barton, treasurer, all of Rome. Apply to any of the officers.

SARATOGA — SARATOGA COUNTY.—Bethesda Parish House, 15 Washington street. No answer has been received.

Church Aid of the Protestant Episcopal Church in the Town of Saratoga. (See class V, division 2.)

SYRACUSE—ONONDAGA COUNTY.—Bureau of Labor and Charities of Syracuse. No. 4 Hendricks block. (See class I.) Shelter for Homeless Women. Roberts avenue. (See class VIII, division 5.)

Young Men's Christian Association. No. 345 Warren street.—Occasionally gives relief in necessitous cases. No answer has been received from the officers.

TROY—RENSSELAER COUNTY.—Day Home. Congress street, corner Seventh street. (See class III, division 3.)

Helping Hand Mission (and Galilean Home for Women). One hundred and twenty-three River street. Also maintains coffee-house and lodgings for men and boys. Corner of Front and Ferry streets. (See class VIII, division 5.)

Ladies' Hebrew Aid Society. No information has been received.

Troy Board of Charities. No. 149 River street. (See class II, division 2.)

TARRYTOWN—WESTCHESTER COUNTY.—Provident Association of Tarrytown. (See class I.)

WATERTOWN—JEFFERSON COUNTY.—Bureau of Charities. (See class I.)

DIVISION 2.—INDUSTRIAL EMPLOYMENT AND TRAINING SCHOOLS FOR GIRLS.

ALBANY—ALBANY COUNTY.—Charity Organization Society of the City of Albany. No. 49 State street. (See class I.)

Orphan's Home of St. Peter's Church (The). No. 9 High street. (See class V, division 2.)

BINGHAMTON—BROOME COUNTY.—Binghamton Bureau of Associated Charities. No. 96 Chenango street. (See class I.)

BROOKLYN—KINGS COUNTY.—Brooklyn Association for Improving the Condition of the Poor. No. 104 Livingston street. (See class III, division 1.)

Brooklyn Bureau of Charities. Maintains laundries and work-rooms at No. 69 Schermerhorn street and No. 621 Monroe street.—To provide temporary work for women. (See class I.)

BROOKLYN — (Continued).

Brooklyn Children's Aid Society. General offices, No. 61 Poplar street. (See class III, division 3.)

Brooklyn Female Employment Society. Incorporated April 12, 1854, under the general statute. Opened May, 1854. No. 93 Court street.—To maintain an institution for the purpose of furnishing work to indigent persons, especially worthy needy women, and establishing schools for instruction and relief to the poor. A donation of five dollars entitles the contributor to send a woman for work to the institution for one year, and the distribution of work is made every Tuesday, from 9 to 11 a. m. Controlled by a board of managers and by an advisory committee. Supported by voluntary contributions and sale of work. Mrs. E. N. Chapman, president, 95 Pierrepont street; Miss Peet, vice-president, 184 Columbia Heights; Miss Starr, secretary, 122 Willow street; Miss A. B. Bedell, treasurer, 11 Cranberry street. Apply to the general superintendent, at 93 Court street, or to any of the managers at any time.

Brooklyn Training School and Home for Young Girls. No. 336 Fourteenth street. (See class III, division 5.)

Home of Industry. No. 201 Livingston street. (See class VIII, division 4.)

St. Peter's Home for Working Girls. Nos. 102 to 112 Congress street. (See class III, division 5.)

St. Vincent's Home of the City of Brooklyn. No. 7 Poplar street. (See class V, division 2.)

Society for the Aid of Friendless Women and Children. No. 20 Concord street. (See class III, division 6.)

Union for Christian Work of the City of Brooklyn. Incorporated June 17, 1871, under the general statute. Organized November, 1866. No. 67 Schermerhorn street.—To maintain a free lending library with reading-rooms; to assist the needy by furnishing them employment and to give instruction (as far as may be well) that will fit persons to earn an honest livelihood. Unsectarian. Last year, 3,763 persons (including men, women and children), were furnished remunerative

BROOKLYN — (Continued).

employment, 58 pupils instructed in drawing, and 70 in stenography, and 127,308 volumes circulated for home reading; also, two large reading-rooms are maintained. Controlled by a board of managers. Supported by voluntary contributions. Robert Foster, president, 290 Adelphi street; Alexander Forman, vice-president, 116 Pierrepont street; William C. Gardner, secretary, 91 Hicks street; Isaac H. Cary, treasurer, 89 Remsen street. Apply for library privileges to Miss Fanny Hull, librarian; all other applications are referred to William A. Butler, superintendent, 67 Schermerhorn street.

Wayside Home. No. 352 Bridge street. (See class VIII, division 5.)

Woman's Work Exchange and Decorative Art Society of Brooklyn. Incorporated February 12, 1886, under the general statute. Organized in 1876. No. 130 Montague street.—To dispose of articles brought for sale by reduced gentlewomen, after being approved by a committee appointed for the purpose. Nearly 500 consignors were assisted, and about \$4,000 worth of their work sold last year. Controlled by a board of officers and managers. Supported by voluntary contributions, and fifteen per cent retained on articles when sold. Mrs. S. M. Fellowes, president, 268 Henry street; Mrs. W. P. Beale, first vice-president, 282 President street; Mrs. J. F. Pierce, second vice-president, 7 Montague street; Mrs. J. S. Frothingham, corresponding secretary, 42 Grace court; Mrs. G. H. Ripley, recording secretary, 105 Columbia street; Miss Adams, treasurer, 228 Degraw street. Apply to the committee in charge, at the rooms of the society as above, Thursday mornings.

Woodyards of the Brooklyn Bureau of Charities. Nos. 78, 80 and 82 Pacific street, and No. 52 South Eighth street.—To provide temporary work for men, who receive food and shelter in return. (See class I.)

BUFFALO — ERIE COUNTY.—Buffalo Children's Aid Society. No. 29 Franklin street. (See class III, division 1.)

BUFFALO — (Continued).

Charity Organization Society of the City of Buffalo. No. 165 Swan street. (See class I.)

Fitch Training School of the Charity Organization Society of the City of Buffalo. Attached to the Fitch Creche. (See class III, division 4.) No. 159 Swan street.—For the training of young girls as domestics and nursery maids. (See, also, class I.)

Provident Woodyard and Labor Bureau of the Charity Organization Society of Buffalo. Office, room 1, Fitch Institute; yard, corner of South Division and Grosvenor streets. (See class I.)

Women's Educational and Industrial Union of Buffalo. Incorporated May 15, 1885, under the general statute. Organized May, 1884. No. 25 Niagara square.—A non-sectarian organization, whose object is to promote mutual co-operation and sympathy among women. Its committees on philanthropy and protection visit the sick and befriend women who need sympathy and help, and investigate complaints of dues unjustly withheld from working women; and, if the complaints are found to be just, provides a lawyer's services free of charge. Controlled by a board of thirty-six directors. Supported by membership, classes, lectures and donations. Mrs. George W. Townsend, president; Mrs. Ellie J. Shepard, recording secretary; Mrs. Arthur W. Austin, corresponding secretary; Mrs. Henry Rumrill, treasurer. Apply at the office, as above.

CASTLETON — RICHMOND COUNTY.—Charity Organization Society of Castleton. (See class I.)

GENEVA — ONTARIO COUNTY.—Woman's Employment Society.—No information has been received.

LOCKPORT—NIAGARA COUNTY.—Charity Organization Society of the City of Lockport. Main and Locust streets. (See class I.)

Provident Woodyard. Organized by the Charity Organization Society of the City of Lockport. Not yet incorporated, but is controlled by an independent board of managers.

NEWBURGH—ORANGE COUNTY.—Associated Charities of Newburgh. (See class I.)

NEW YORK CITY.—Ahawath Chesed Sisterhood of Personal Service. No. 7 East Third street. (See class III, division 1.)
American Female Guardian Society and Home for the Friendless. No. 32 East Thirtieth street, and 29 East Twenty-ninth street. (See class III, division 1.)

Children's Aid Society (The). United Charities Building, Twenty-second street and Fourth avenue. (See class III, division 3.)

Christian Aid to Employment Society. Incorporated October 16, 1888, under the general statute. Office, 50 Bible House, Eighth street and Fourth avenue.—To assist working men and women to secure suitable employment, under conditions favorable to the development and maintenance of moral and Christian character and wholesome self-respect; and thus to encourage them in habits of industry and self-support; also seeks to elevate and improve the condition of working women and girls, by opening to them through its influence, better, more remunerative and more healthful avenues of self-support than they might otherwise be able to reach, and to this end will endeavor to maintain a watchful care over those who find employment through its instrumentality. Charitable assistance is occasionally rendered in distressing cases, which come before the employment bureau. Controlled by a board of managers. Supported by regular subscriptions, fees from employers, and voluntary contributions. Rev. Geo. Alexander, D. D., president, 25 University place; Wm. R. Wilder, secretary, Plainfield, N. J.; Fred'k A. Booth, treasurer, 39 West Tenth street; Mrs. Alida Stanwood, superintendent, to whom apply at the office from 9.30 a. m. to 4 p. m.

Church Mission to Deaf-Mutes. No. 9 West Eighteenth street. (See class VI, division 2.)

Down-Town Relief Bureau of the Trinity Church Association. No. 209 Fulton street. (See class III, division 1.)

NEW YORK CITY — (Continued).

Five Points House of Industry. No. 155 Worth street. (See class III, division 5.)

Free Home for Destitute Girls. No. 23 East Eleventh street. (See class III, division 5.)

Friends' Employment Society of New York. (Organized 1862.)

Rutherford place and East Sixteenth street.—To afford relief to the poor, the temperate and self-respecting class of women, who do not live by public charity, by employment in sewing. On the payment of five dollars by a member, one dollar's worth of sewing is given weekly to the applicant. Twenty beneficiaries last year. Controlled by a board of managers. Supported by voluntary contributions. Hannah W. Haydock, directress, 212 East Twelfth street; Ella F. Bunting, secretary, 216 East Twelfth street; Elizabeth F. Bogardus, treasurer, 269 West Eleventh street. Apply to the officers at Rutherford place, the last Friday in December, at 2 p. m., by letter from the contributor of five dollars.

German Ladies' Society for the Relief of Destitute Widows, Orphans and Sick Persons. (See class III, division 1.)

Guardians of the Sisterhood of the Holy Communion. Incorporated September 22, 1871, under the general statute. Re-incorporated December 6, 1892. Organized in 1852.—Sisters' House of the Church of the Holy Communion was opened in 1853. No. 328 Sixth avenue. Used as a residence by the sisterhood and lay workers engaged in the various departments of the parochial charities. For the care of the sick, the relief of the poor, the education of children, and other works of charity incidentally connected with the above-mentioned objects. The Sisterhood here maintains also a training school for girls (opened in 1856), where pupils do the work of the house for training in domestic service, and also receive instruction in English branches. Capacity for and average number of girls, fifteen. Controlled by the Guardians of the Sisterhood. Supported by subscriptions and donations. Rev. Henry Mottet, president; Miss Julia Chalmers, treasurer, 12 West Seven-

NEW YORK CITY — (Continued).

teenth street; Sister Eliza in charge, to whom apply at any time.

Home for Fallen and Friendless Girls (Wetmore Home). Nos. 49 and 50 South Washington square. (See class VIII, division 5.)

Home of Industry and Refuge for Discharged Convicts. No. 224 West Sixty-third street. (See class VIII, division 4.)

House of Mercy, New York (Protestant Episcopal). Two Hundred and Sixth street, Inwood-on-the-Hudson. (See class VIII, division 5.)

Howard Mission and Home for Little Wanderers. No. 206 Fifth street. (See class III, division 1.)

Industrial Christian Alliance. Incorporated June 18, 1891, under the general statute. Office and home at No. 113 Macdougall street.—To furnish men and women who desire and are capable of honest, self-supporting work, with opportunities and assistance, to secure the same; to provide the young and others incapable of self-support with temporal and moral assistance and with such training and moral instruction as may, under the circumstance, be deemed most practical and expedient to make them useful and self-respecting members of the community; to imbue the objects of its care with a love for the pure principles of Christianity as revealed in the Holy Scriptures. The Society assists homeless men and women who desire to lead better lives and who are willing to work; maintains at present a temporary Industrial Home (capacity for forty), for men at 113 Macdougall street, where the inmates do the work of the house, work in the broom factory attached and at such other employment as may be procured for them, and thus they are helped to self-respect and self-support. A Home for Women will be opened shortly, for the same object. Entirely unsectarian. Controlled by a board of trustees. Supported by voluntary contributions. George D. Mackay, president, 53 East Eightieth street; James G. Beemer, vice-president, Yonkers; Arthur W. Milbury, secretary, 9 Christopher street; James E. Ware, treasurer, 489

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Fifth avenue; Edward G. Draper, superintendent of industries, 9 Christopher street, to whom apply at the office at 113 Macdougall street.

Ladies' Helping Hand Association of the City of New York. Incorporated, 1870, under general statute.—Weekly meetings are held in the chapel at 160 West Twenty-ninth street on Fridays from November till May, from 2 to 5 p. m. To advance the social and moral condition of women, who are now debarred in many ways from obtaining a livelihood, open to others; to provide them with and instruct them in sewing, paying them by the hour with clothing and groceries, and to surround them by every means possible, with healthful, moral influences and restraints, thus hoping to elevate them in the social scale to self-respect and true womanhood. Also to lend a "helping hand" with discretion to those who may be suffering from temporary destitution, and to assist such persons to procure situations, or obtain work from other societies. Over 300 women thus assisted and instructed annually. Controlled by a board of managers. Supported by voluntary subscriptions and donations. Mrs. Wm. Post, first directress, 5 East Fifty-sixth street; Mrs. E. F. Hatfield, recording secretary, 58 West Seventeenth street; Miss E. W. Hatfield, corresponding secretary, 149 West Thirty-fourth street; Mrs. Peter Donald, treasurer, 39 West Forty-sixth street; Miss A. E. Pierson, missionary, 406 West Thirty-fourth street, to whom apply.

Madison Avenue Depository and Exchange for Woman's Work. Incorporated in 1886 under the general statute. No. 628 Madison avenue.—To establish and maintain an institution for benevolent and charitable purposes. A subscription of five dollars admits the work of a self-supporting woman to the salesroom for one year. Depositors must pay an annual fee of three dollars or present a ticket from a manager or subscriber, and ten per cent is charged on all sales. Seven hundred and seventeen depositors last year. Controlled by a board of managers. Supported by voluntary contributions, entrance fees and sales of work. Mrs. Hooper C. Van Vorst,

NEW YORK CITY — (Continued).

president; Mrs. Horace T. Hanks, secretary; Mrs. Herman O. Armour, treasurer. Apply at the depository during office hours; cash payments are made and fancy articles registered only on Wednesdays and Thursdays from 9 a. m. to 5 p. m.

Margaret Strachan Home for Fallen Women. Nos. 103 and 105 West Twenty-seventh street. (See class VIII, division 5.)

Mission of the Immaculate Virgin for the Protection of Homeless and Destitute Children. Corner of Lafayette place and Great Jones street. (See class V, division 2.)

New York Association for Improving the Condition of the Poor. United Charities Building, Fourth avenue and Twenty-second street. (See class III, division 1.)

New York Bible and Fruit Mission to our Public Hospitals. Nos. 416 to 422 East Twenty-sixth street. (See class IV, division 4.)

New York Colored Mission. No. 135 West Thirtieth street. (See class III, division 1.)

New York Exchange for Woman's Work. Incorporated November 25, 1878, under the general statute. No. 329 Fifth avenue.—To provide a place for exhibition and sale of articles made by gentlewomen, who have been reduced in circumstances by misfortune, etc. An annual subscription of five dollars admits the work of three women for one year, and ten per cent is charged on goods sold. Fifty thousand dollars was paid to consignors last year. Controlled by a board of lady managers and an advisory board of gentlemen. Supported by annual subscriptions, commissions on sales and by voluntary donations. Mrs. William G. Choate, president, 40 West Fifty-ninth street; Mrs. Wm. E. Dodge, 225 Madison avenue, and Mrs. Cornelius R. Agnew, Palisades, N. Y., vice-presidents; Miss E. S. Vail, secretary, Demarest, N. J.; Mrs. John Paton, treasurer, 301 Lexington avenue. Apply at any time through the superintendent to the board of managers at No. 329 Fifth avenue.

New York Foundling Hospital. No. 175 East Sixty-eighth street. (See class V, division 2.)

NEW YORK CITY — (Continued).

New York House and School of Industry. Incorporated by special act, ———, 1851. Organized in 1850. No. 120 West Sixteenth street.—To afford to infirm and destitute females employment in needlework, at such a rate of remuneration as may enable them to exist; that this employment is given, according to the circumstances, either at the residence of the applicant or at the House of Industry, where also instruction in sewing is given to such as need it; that aid to such as may find more suitable employment at service is studiously avoided; that a sewing school for the young, also, is maintained at the establishment on Wednesday afternoons and Saturday mornings, from September to June inclusive, and that the charity is unsectarian. It also pensions those employees who have grown too infirm to labor for themselves any longer. All goods made are sold in a store at the house. Controlled by a board of directresses and managers, and by an advisory board of gentlemen. Supported by voluntary contributions, legacies and sale of work. Mrs. Whitelaw Reid, president, 451 Madison avenue; Mrs. Granville B. Smith, vice-president, 19 West Sixteenth street; Miss M. L. Warren, recording secretary, New Brunswick, N. J.; Miss K. T. Martin, financial secretary, 27 West Thirty-second street; Miss Kennedy, secretary of visiting committee, 41 Fifth avenue; Mrs. J. Newton Ewell, treasurer, 73 East Fifty-sixth street. Apply to the secretary of the visiting committee at the house, No. 120 West Sixteenth street, Monday, Friday and Saturday of each week.

New York Institution for the Instruction of the Deaf and Dumb. West One Hundred and Sixty-third street and Grand Boulevard. (See class VI, division 2.)

New York Practical Aid Society. No. 327 West Thirty-sixth street. (See class III, division 1.)

St. Barnabas' House of the New York Protestant-Episcopal City Mission Society. No. 306 Mulberry street. (See class III, division 1.)

NEW YORK CITY — (Continued).

St. John's Day Nursery of the New York Foundling Hospital.

No. 223 East Sixty-seventh street. (See class III, division 4.)

St. Mary's Lodging-house. No. 143 West Fourteenth street.

(See class III, division 5.)

Shelter for Respectable Girls. Nos. 148 and 150 West Fourteenth street. (See class III, division 5.)

Sheltering Arms. West One Hundred and Twenty-ninth street and Amsterdam avenue. (See class V, division 2.)

Sisters of the Strangers. 4 Winthrop place, Mercer street (See class III, division 1.)

Society for Befriending Self-supporting Women. No. 356 West Thirty-third street. (See class III, division 6.)

Society for the Employment and Relief of Poor Women. Incorporated ————— under the general statute. Employment society's Repository, 146 East Sixteenth street.—To give sewing to poor women able and willing to labor, who, from age, infirmity, sickness, having young children, or other causes, are unable to support themselves without assistance, or to leave their homes to obtain employment elsewhere. Ninety beneficiaries last year, and 7,659 garments were made. Controlled by a board of managers. Supported by donations, subscriptions of members, collection from All Souls' Unitarian Church and interest on invested funds. Mrs. S. Sidney Smith, president; Mrs. W. E. Worthen, vice-president; Miss H. C. Butler, secretary, 31 East Sixty-ninth street. Mrs. Nathan Chandler, treasurer, 33 East Thirty-seventh street. Apply at 104 East Twentieth street, Thursdays from 10 a. m. to 12 m., from November to April inclusive, when work is issued, and subscriptions may also be received.

Society for the Relief of the Destitute Blind of the City of New York and its Vicinity. The home is situated on Amsterdam avenue and One Hundred and Fourth street. (See class VI, division 1.)

Society of St. Martha. No. 34 West Twenty-second street. (See class V, division 2.)

NEW YORK CITY — (Continued).

Temporary Home for Women. No. 84 Second avenue. (See class III, division 6.)

Trinity Church Association. No. 209 Fulton street. (See class III, division 1.)

United Hebrew Charities of the City of New York. No. 128 Second avenue. (See class III, division 1.)

United States Immigration Service. Ellis island, New York harbor. City office, Barge Office Building, Battery Park. (See class II, division 3.)

Women's Prison Association and Home (The). No. 110 Second avenue. (See class VIII, division 5.)

Working Women's Protective Union. No. 19 Clinton place. (See class IV, division 1.)

Young Women's Christian Association of the City of New York. No. 7 East Fifteenth street. (See class III, division 3.)

Young Women's Society of the French Evangelical Church in the City of New York. No. 341 West Thirtieth street. (See class III, division 6.)

POUGHKEEPSIE — DUTCHESS COUNTY.—House of Industry in the City of Poughkeepsie. Incorporated April 24, 1871, under the general statute. No. 16 Liberty street.—To aid the poor and worthy women of the city in obtaining employment by giving them sewing in their homes. Those are assisted who have no able-bodied men in their families to support them. Between thirty and forty beneficiaries last year. Controlled by a board of managers. Supported by subscriptions, income from legacies and sale of garments made by the women. Mrs. O. H. Booth, president; Mrs. James H. Weeks, first vice-president; Mrs. William Wilkinson, second vice-president; Mrs. James Wood, third vice-president; Mrs. Mary Van Girson, secretary; Miss Sarah Bowne, treasurer. Apply to the matron in person, daily, except Sunday, at the house.

ROCHESTER — MONROE COUNTY.—Rochester Home of Industry. No. 712 East Main street. (See class V, division 2.)

ROCHESTER — (Continued).

Rochester Society for the Organization of Charity. No. 87

South Washington street. (See class I.)

United Hebrew Charities of Rochester. (See class III, division 1.)

Woman's Christian Association. Incorporated —————.

Maintains an employment bureau, at 70 Sophia street; a lodging-house for transients, at 72 Sophia street, and a boarding-house for self-supporting women, at 118 Franklin street. No information has been received from the officers.

ROME — ONEIDA COUNTY.—Rome Bureau of Employment and Relief. No. 116 Washington street. (See class III, division 1.)

SYRACUSE — ONONDAGA COUNTY.—Bureau of Labor and Charities of Syracuse. No. 4 Hendricks Block. (See class I.)
Shelter for Homeless Women. Roberts avenue. (See class VIII, division 5.)

Women's Educational and Industrial Union. No. 329 Montgomery street. No information has been received.

TARRYTOWN — WESTCHESTER COUNTY.—Provident Association of Tarrytown. (See class I.)

WATERTOWN — JEFFERSON COUNTY.—Bureau of Charities. (See class I.)

DIVISION 3.— EDUCATIONAL AND INDUSTRIAL SCHOOLS AND KINDERGARTENS FOR CHILDREN.

ALBANY — ALBANY COUNTY.—Children's Friend Society of the City of Albany, and Industrial School. Incorporated by special act, April 7, 1863. Organized in 1856. No. 113 Beaver street.— To gather into schools vagrant children, who, from the poverty or vice of their parents, are unable to attend the public schools, and such as gain a livelihood by begging or pilfering; to give them ideas of moral and religious duty;

ALBANY — (Continued).

to instruct them in the elements of learning, and in different branches of industry, and thus enable them to obtain an honest and honorable support, and to become useful and respectable members of society; the limit of the ages of such children being, girls, from 4 to 16 years; boys, from 4 to 14 years. Maintains an industrial school, which accommodates 100 or more. Average daily attendance, seventy. Controlled by a board of managers. Supported by voluntary subscriptions and invested funds. Mrs. S. Winne, president; Miss S. J. Monteath, secretary; Miss Margaret J. McElroy, treasurer; all of Albany. Apply to the matron, or to any manager at the school.

St. Vincent's Orphan Society in the City of Albany. Western avenue, Elm street, and Schuyler mansion, Clinton street. (See class V, division 2.)

BINGHAMTON — BROOME COUNTY. — Susquehanna Valley Home and Industrial School for Orphan and Indigent Children. (See class V, division 2.)

BROOKLYN — KINGS COUNTY. — Brooklyn Female Employment Society. No. 93 Court street. (See class III, division 2.)

Brooklyn Children's Aid Society. Incorporated February, 1866, under the general statute. General offices, No. 61 Poplar street; Day Nursery at 139 Van Brunt street, Brooklyn, and Seaside Home, Coney Island. — For the protection, care and shelter of friendless and vagrant youth, furnishing them with food, raiment and lodging; aiding and administering to their wants, providing them with occupation, instructing them in moral and religious truth, and in the rudiments of education; and with such means as the society can properly employ, endeavoring to make them virtuous and useful citizens. Has seven departments, as follows: The industrial schools (Nos. 1 and 2); the Newsboys' Home (capacity for 120); sewing-machine school, at No. 61 Poplar street; special relief work; and fresh air fund; Day Nursery, at 139 Van Brunt street; and the Seaside Home for Children, at Coney island

BROOKLYN — (Continued).

(accommodates 480). Controlled by a board of trustees. Supported by voluntary subscriptions. Charles K. Wallace, president, 212 Lefferts place; E. B. Wood, secretary, 22 Court street; William W. Rossiter, treasurer, 53 Seventh avenue; L. C. Hill, superintendent, 94 Lafayette avenue, to whom apply at 61 Poplar street.

Brooklyn Guild Association. Incorporated April 12, 1890, under the general statute. Organized April 13, 1889, as "The Brooklyn Guild." No. 245 Concord street.—To establish and conduct club-houses, which shall be common meeting places for all sorts and conditions of men, and in which the various classes of society may meet and engage together in social gatherings, concerts, clubs, lectures, classes, and the like; to establish and conduct free kindergartens; to give exhibitions; to aid in enforcing the sanitary and building laws and ordinances of the State and city, and in all ways to develop and foster the bodily, mental and moral life of the neighborhoods in which such club-houses shall be established; and to do all such things as may assist in carrying out such objects. Unsectarian. Controlled by a board of trustees. Supported by voluntary contributions. William Potts, president, 171 Livingston street; James A. Skilton, vice-president, 372 Decatur street; Edwin M. Wheeler, secretary, 143 Clinton street; Miss Mary E. Butterick, treasurer, 406 Franklin avenue; Mrs. Ellen T. Brockway, kindergarten manager, 13 Greene avenue; Ellis G. Seymour, superintendent, 245 Concord street, to whom apply.

Brooklyn Industrial School Association and Home for Destitute Children. Incorporated by special act, April 15, 1857. Opened February 12, 1862.—The Home is at Sterling place near Vanderbilt avenue. Maintains six schools, situated as follows: No. 1, Concord street, opposite Prince; No. 2, 10 Fourth street; No. 3, at the "Home," Sterling place; No. 4, 206 Twelfth street; No. 5, Throop avenue, near Ellery street; No. 6, 101 Steuben street. For the amelioration of the destitute children of the city of Brooklyn, Kings county; to pro-

BROOKLYN — (Continued).

vide a home for the homeless, and schools for those who cannot on account of their poverty provide suitable clothing to attend the board schools. The children from "The Society for the Prevention of Cruelty to Children" are sent to this home, as also are the (Protestant) county wards, supported by the county by payment of twenty-five cents per day. Feeble-minded children and those afflicted with contagious diseases are not admitted. Capacity and average number of children in the home, 300. Total number in the home and schools last year, 1,300. Controlled by a board of managers, representing the various churches of Brooklyn. Supported by voluntary contributions and by the county. Mrs. J. Meriom, president, 108 Second place; Mrs. W. H. Lyon, vice-president, 170 New York avenue; Mrs. J. Vanderbilt, corresponding secretary, Flatbush; Mrs. W. T. Lawrence, recording secretary, 44 Pierrepont street; Mrs. W. C. Spelman, treasurer, 121 Willow street. Apply to the executive committee or to any of the officers.

Free Kindergarten Association. Incorporated. Organized in 1891. Pratt Institute.—To establish and maintain free kindergartens in the city of Brooklyn. Frank L. Babbott, president and superintendent.

Holy Innocent's Union. No. 112 Warren street. (See class III, division 1.)

House of St. Giles the Cripple. No. 193 State street. (See class VII, division 4.)

Industrial School Association of Brooklyn, E. D. Incorporated April 12, 1860, under the general statute. Amendatory act, chapter 433, Laws of 1870. Organized March, 1854.—The Home was opened November, 1869. Nos. 141 to 153 South Third street. Branch No. 1, 480 Humboldt street; branch No. 268 Scholes street; Day Nursery, 480 Humboldt street. To cause the children of the school to be taught in the elementary branches of English education, to see that habits of neatness and order are inculcated, to be instructed in domestic duties, to provide food and clothing for the children, and

BROOKLYN — (Continued).

to procure for them places of employment when they have arrived at a suitable age. For the children from 2 to 12 years of age of the worthy indigent poor, who have no means of support. Capacity, 230. Average number of inmates, 206. Daily instruction and meals are given to 230 outside poor children in the branch schools, in addition to the home relief. Controlled by a board of trustees and managers. Supported by voluntary donations, contributions, etc. Benjamin W. Wilson, president; Lewis P. Nostrand, vice-president; George H. Fisher, secretary, and John Broach, treasurer of board of trustees. Mrs. B. H. Howell, first directress, 96 South Ninth street; Miss S. F. Snow, second directress, 471 Bedford avenue; Mrs. James Rowland, recording secretary, 98 Taylor street; Mrs. E. A. Wheeler, corresponding secretary, 483 Bedford avenue; Mrs. J. D. Wade, 252 South Ninth street; Miss M. E. Whittelsey, superintendent of home and school, to whom apply personally from 9 a. m. to 5 p. m. at the institution, or to the executive board, each Friday afternoon.

St. Paul's Industrial School, Congress and Clinton streets, which see under the Roman Catholic Orphan Asylum Society in the City of Brooklyn, etc. (See class V, division 2.)

Society for the Aid of Friendless Women and Children. No. 20 Concord street. (See class III, division 6.)

Union for Christian Work of the City of Brooklyn. No. 67 Schermerhorn street. (See class III, division 2.)

BUFFALO — ERIE COUNTY.—Buffalo Children's Aid Society. No. 29 Franklin street. (See class III, division 1.)

ELMIRA — CHEMUNG COUNTY.—The Anchorage. No. 955 College avenue. (See class VIII, division 5.)

Elmira Industrial School Association. Incorporated November 5, 1879. East Church street, corner of Madison avenue.—To care for the children of the very poor and help the needy to self-support; to instruct the children in the rudiments of learning and such branches of industry as shall be prescribed from time to time. Particularly for those families of which

ELMIRA — (Continued).

the parents are worthy of assistance, but who are too poor to supply the necessary books, suitable clothing, or food sufficient for the attendance of their little ones at the public schools. Capacity of school for seventy. About fifty children attend daily. During last year, 122 pupils and their families were supplied with 8,237 meals, 822 pounds of food, and 1,124 garments. Controlled by a board of lady managers, with an advisory board of gentlemen. Supported by voluntary contributions, donations and the receipts of an annual fair and supper. Mrs. George H. McKnight, president; Mrs. H. Boardman, vice-president; Mrs. Herman Joerg, corresponding secretary; C. J. Langdon, treasurer, all of Elmira; Mrs. E. C. Wright, city missionary, to whom apply at the school at any time, or to the president.

KINGSTON — ULSTER COUNTY.—Industrial Home of the City of Kingston. (See class V, division 2.)**NEW YORK CITY.** Ahawath Chesed Sisterhood of Personal Service. No. 7 East Third street. (See class III, division 1.)

American Female Guardian Society and Home for the Friendless. No. 32 East Thirtieth street and 29 East Twenty-ninth street. (See class III, division 1.)

Association for Befriending Children and Young Girls. Nos. 136 and 138 Second avenue. (See class III, division 5.)

Association for the Improved Instruction of Deaf-Mutes. Lexington avenue and Sixty-seventh street. (See class VI, division 2.)

Baron de Hirsch Fund (Central Committee of the). No. 45 Broadway. (See class III, division 8.)

Bethel Society of Personal Service. No. 355 East Sixty-second street. (See class III, division 1.)

Bethlehem Day Nursery. No. 249 East Thirtieth street. (See class III, division 4.)

Cherry Street Kindergarten. No. 340 Cherry street. (See Tenement-house Building Committee, class IV, division 1.)

NEW YORK CITY — (Continued).

Children's Aid Society. Incorporated January 10, 1855, under the general statute. Organized 1853. Central office formerly No. 24 St. Mark's place (Eighth street); now removed to the United Charities building, northeast corner of Fourth avenue and Twenty-second street.—To improve the condition of poor and destitute children in the city of New York, by gathering those who do not and can not attend the public schools, into its industrial schools, caring and providing for any destitute children, or homeless boys or girls in lodging-houses, and procuring homes for them in the rural districts and in the west. The society also assists in transporting families with young children, to the south and west under proper conditions. Children of unsound mind are not received. Controlled by a board of trustees. Supported by voluntary contributions, legacies and public school fund. D. Willis James, 11 Cliff street, president; Geo. S. Coe, treasurer, 128 Broadway; C. Loring Brace, secretary; L. W. Holste, assistant secretary, to whom apply at the central office daily, except Sundays, from 9 a. m. to 5 p. m. The following are the various charitable enterprises connected with the society:

East Side Flower Mission, 287 Broadway; flowers distributed daily from May to November among the sick and poor.

Free reading-rooms for young men, 247 East Forty-fourth street and 219 Sullivan street.

Health Home at West Coney Island; has cottages and dormitories for the reception of mothers with sick children under 5 years of age. No patient, however sick, except with a contagious disease, is refused admission. One week's stay is allowed. Number of mothers and sick infants treated during the year, 7,489.

Sick Children's Mission, 287 East Broadway; has a staff of ten physicians and four nurses, who visit the sick poor in their homes, giving free medical attendance, medicine and food to sick children. Two thousand four hundred and fifty-two cases treated last year.

NEW YORK CITY — (Continued).

Summer Home, at Bath Beach, L. I.; gives a week of rest and pleasure to poor children of the tenement houses, and also day picnics. Four thousand eight hundred and fifty-three children received last year. It embraces the Haxtun Cottage, for *crippled girls* under 15 years of age.

Industrial schools, open to all children who can not attend the public schools, are located as follows: Astor Memorial, 256 Mott street; Avenue B, 533 East Sixteenth street; Brace Memorial, 9 Duane street; East River, 247 East Forty-fourth street; East Side, 287 East Broadway; Eleventh Ward, 295 Eighth street; Fourth ward, 28 Pike street; Fifth Ward, 36 Beach street; Fifty-second street; 573 West Fifty-second street; German, 272 Second street; Henrietta, 215 East Twenty-first street; Italian, 156 Leonard street; Jones Memorial, 407 East Seventy-third street; Phelps, 314 East Thirty-fifth street; Rhinelander, 350 East Eighty-eight street; Sixteenth Ward, 211 West Eighteenth street; Sixth street, 632 Sixth street; West Side, 201 West Thirty-second street; West Side Italian, 24 Sullivan street.

Night schools: German, 272 Second street; Italian, 156 Leonard street; Brace Memorial (Newsboys'), 9 Duane street; Eleventh Ward, 295 Eighth street; East Side, 287 East Broadway; East River, 247 East Forty-fourth street; Henrietta, 251 East Twenty-first street; Lord, 135 Greenwich street; Jones Memorial, 407 East Seventy-third street; Fifty-second street, 573 West Fifty-second street; West Side, 201 West Thirty-second street.

In the day and evening schools 11,638 children were taught and partly clothed and fed last year, 579,552 meals being supplied.

Lodging-houses, in which last year were sheltered 6,606 different boys and girls; 257,111 meals and 201,997 lodgings were provided. Some of these have training schools for their inmates attached, viz.: Brace Memorial, 9 Duane street; Elizabeth Home and Training School for Girls, also for type-writing, dressmaking and sewing-machine school and laundry,

NEW YORK CITY — (Continued).

307 and 309 East Twelfth street; Tompkins Square, 295 Eighth street; East Side, 287 East Broadway; Forty-fourth street, for homeless boys, 247 East Forty-fourth street (with brush shops for *crippled boys*, to whom, as a class, special care is given); West Side, 400 Seventh avenue, with printing shop.

Children's Charitable Union. Incorporated 1877, under the general statute. No. 70 Avenue D.—To give very poor children, from 3 to 6 years of age, a kindergarten education, and a warm noon-day meal daily. Average attendance between seventy and eighty. Controlled by a board of managers. Supported by yearly subscriptions of patrons, and members, and by voluntary contributions. Miss A. Schurz, president, 175 West Fifty-eighth street; Mrs. E. Riche, vice-president, 174 St. Nicholas avenue; Mrs. R. A. Schoneman, secretary, Fort Washington; Mrs. H. Heidelberg, treasurer, 56 East Fifty-eighth street. Apply week-days at the school, No. 70 Avenue B, from 9 a. m. to 12 m.

Eighth Ward Mission. No. 49 Macdougall street. (See class V, division 2.)

Emanuel Sisterhood for Personal Service. Office No. 159 East Seventy-fourth street. (See class III, division 1.)

Five Points House of Industry. No. 155 Werth street. (See class III, division 5.)

Harlem Free Kindergarten Association. Incorporated January 19, 1891, under general statute. Opened September, 1891. No. 2248 First avenue.—To organize, foster, maintain and assist free unsectarian kindergartens for the children of the poor and needy, and to improve the condition of such children generally. A noonday meal of bread and milk is given daily. Average number of children in attendance, thirty. Controlled by a board of directors. Supported by dues of members and voluntary contributions. Meyer D. Rothschild, 1905 Madison avenue; James Klaber, 125 West One Hundred and Twenty-fourth street; Ezra A. Tuttle, 271 West One Hundred and

NEW YORK CITY — (Continued).

Thirty-second street; Richard Sutro, 635 Park avenue; Isaac N. Falk, 311 East One Hundred and Twenty-fourth street; Thomas McAdams, 5 West One Hundred and Twenty-first street; August Oppenheimer, 9 East One Hundred and Twenty-sixth street, directors. Apply at the school any day.

Hebrew Free School Association of the City of New York. Incorporated in 1864, under the general statute. "Hebrew Institute," corner East Broadway and Jefferson street. Branch, 624 East Fifth street.—Maintains schools for the religious, moral and industrial education of boys and girls of the Hebrew faith, in which about 2,700 pupils receive a mid-day meal, necessary clothing and instruction in religion and in Hebrew. Kindergarten, girls' industrial and boys' technical departments. Over 3,000 pupils in attendance. Controlled by a board of directors and trustees. Supported by voluntary contributions and legacies. Albert P. Hoshstadter, president; Henry Bridge, vice-president; T. Oberfelder, secretary; Newman Cowen, treasurer. Apply to the superintendent or at either school any Sunday.

Hebrew Technical Institute. Incorporated 1884, under the general statute. Amendatory act, chapter 17, Laws of 1892. Opened in 1884. 36 Stuyvesant street.—A free technical and trade school, in which poor Jewish boys are trained as artisans. Controlled by board of directors. Supported by patrons and members' subscriptions, and voluntary contributions. Jas. H. Hoffman, president, 5 Mercer street; J. B. Bloomingdale, first vice-president, corner Fifty-ninth street and Third avenue; Sol B. Solomon, second vice-president, 29 Union square; Jos. Wetzler, secretary, 150 Broadway; Leo Schlesinger, treasurer, 129 Crosby street. Apply for admission in June at the institute.

Home for Fallen and Friendless Girls (Wetmore Home). Nos. 49 and 50 South Washington square. (See class VIII, division 5.)

Howard Mission and Home for Little Wanderers. No. 206 Fifth street. (See class III, division 1.)

NEW YORK CITY — (Continued).

Institution of Mercy. No. 1075 Madison avenue. (See class V, division 2.)

Ladies' Bikur Cholim Society of New York City. No. 177 East Broadway. (See class III, division 1.)

Louis Down-town Sabbath and Daily School. Incorporated May 20, 1884, under the general statute, as the "Louis Down-town School;" name changed by adding "and Daily School," by special act, December 8, 1888. Opened in December, 1880. No. 267 Henry street.—For the elevation of the female children, 9 years of age and upwards, of the Jewish poor of the down-town districts of New York, by the maintenance of a Sabbath and daily school for ethical, religious, secular and technical instruction; to relieve their physical necessities by supplying them with clothing and food at the Sabbath sessions of the school. The daily school is for girls from 12 years old and upwards, who are taught the English branches, bookkeeping, stenography, designing, needlework, dress-making, millinery and cooking. Immigrant girls, newly landed, can also be instructed in housework. A vacation school for sewing, etc., is maintained during August and September, and a sewing class for grown girls from November to June. The homes of the children are also visited. About 300 in attendance in the schools. Controlled by a board of trustees. Supported by membership dues, donations and proceeds from entertainments given. Mrs. A. H. Louis, president, 66 West Fifty-sixth street; Mrs. J. N. Bloom, corresponding secretary, 604 Park avenue; Miss Tillie Eising, recording secretary, 6 East Sixty-sixth street; Mrs. L. Kohns, treasurer, 23 West Fifty-sixth street. Apply at 267 Henry street any day of the week.

Mission of the Immaculate Virgin, for the Protection of Homeless and Destitute Children. Lafayette place, corner of Great Jones street. (See class V, division 2.)

New York Bible and Fruit Mission to our Public Hospitals. Nos. 416 to 422 East Twenty-sixth street. (See class IV, division 4.)

NEW YORK CITY — (Continued).

New York Colored Mission. No. 135 West Thirtieth street.
(See class III, division 1.)

New York Cooking School. Incorporated in 1878, under the general statute. "United Charities Building," 105 East Twenty-second street. Gives free lessons in plain cooking, marketing, etc., to poor children under 15 years of age; maintains also classess for working girls, at one dollar and a half for course of twelve lessons; for nurses, in cooking for the sick, and for ladies, at usual rates. Controlled by a board of managers. Supported by voluntary contributions and fees of paying classes. Apply at the school, as above, during the day.—Copied from the "New York Charities' Directory," as no reply has been received.

New York Foundling Hospital. No. 175 East Sixty-eighth street. (See class V, division 2.)

New York Ladies' Home Missionary Society of the Methodist Episcopal Church (Five Points Mission). Incorporated in 1856. This society, composed of members representing all the Methodist Episcopal churches of New York, maintains the FIVE POINTS MISSION, Opened in 1850. No. 63 Park street.—For the purpose of feeding, clothing, educating and otherwise caring for the children of the very poor in the vicinity of the "Five Points," in New York city; and also to assist their parents, living in the neighboring tenements, to a livelihood, and about eighteen worthy needy families who live, free of rent, in the mission building; also employs missionaries to labor among the poor of the district. Maintains a day school, with over 600 children in attendance from the district tenements; and conducts a boys' and girls' shoe club, cooking school for girls from 10 to 18 years of age, free library and reading-room, fresh air fund and sewing school. Five hundred and sixty-four families and 5,723 persons were relieved last year; also, 23,712 articles of clothing given away, and 87,162 dinners served. Controlled by a board of managers. Supported by voluntary contributions and small appropriation from the New York board of education. Mrs.

NEW YORK CITY — (Continued).

J. A. Wright, first directress, 452 Lexington avenue; Mrs. J. A. Kennedy, second directress; Miss S. Roche, corresponding secretary, 346 West Twentieth street; Miss E. A. Truslow, recording secretary, 36 East Forty-ninth street; Mrs. H. B. Skidmore, treasurer, 230 West Fifty-ninth street. Apply to the Rev. J. W. Selleck, superintendent of the mission, at 63 Park street, at any time.

New York House and School of Industry. No. 120 West Sixteenth street. (See class III, division 2.)

New York Kindergarten Association. Incorporated February, 1892, under the general statute. Organized in 1889.—To promote the establishment and maintenance of kindergartens in New York for the purpose of furnishing physical, moral and intellectual training to the children, from 3 to 6 years of age, of the poor in the tenement districts. Has two kindergartens in operation at 221 East Fifty-first street, corner Sixty-third street and First avenue, and 228 West Thirty-fifth street. Controlled by board of managers. Supported by voluntary contributions. Richard W. Gilder, president, 33 East Seventeenth street; Daniel S. Remsen, corresponding secretary, 69 Wall street; Edward A. Darling, recording secretary, Columbia College; Jasper T. Goodwin, treasurer, Columbia College. Apply at the kindergartens from 9 to 12 a. m. daily.

Nursery and Child's Hospital. No. 571 Lexington avenue, corner of Fifty-first street. (See class VII, division 4.)

St. Barnabas' House of the "New York Protestant Episcopal City Mission Society." No. 306 Mulberry street. (See class III, division 1.)

St. John the Baptist Foundation. Incorporated May, 1876, under the general statute. Mother house, or St. John the Baptist House, is at 233 East Seventeenth street.—A community of sisters who devote their lives to charitable and mission work and maintain a training school for the care and education of young girls from the tenement-house districts of New York, in the Mother house, and also to instruct the daughters of clergymen in ecclesiastical embroidery. The

NEW YORK CITY — (Continued).

sisters have also under their charge St. Andrew's Convalescent Hospital (New York city), St. Helena's Home, 653 Fifth street, (New York city), headquarters of the sisters for mission work among the German poor of that vicinity; St. Anna's Cottage (Farmingdale, L. I.), a summer home for women and children of the mission of the Holy Cross in New York; Midnight Mission (New York city), for the reclamation of fallen women, and St. Michael's Home (Mamaroneck, N. Y.), an adjunct of the Midnight Mission, conducted as a reformatory industrial school for young girls of higher social and moral level than are received in the mission. Capacity of the mother house, forty. Average number of inmates, thirty-five. Controlled and supported by the Sisters of St. John the Baptist. Rev. G. H. Houghton, warden, No. 1 East Twenty-ninth street. Apply to the Mother Superior, at 233 East Seventeenth street, at any time.

St. Joseph's Institute for the Improved Instruction of Deaf-Mutes. No. 772 East One Hundred and Eighty-eighth street, Fordham. Branches: Buffalo avenue, Brooklyn, Kings county, and Throgg's Neck, Westchester, Westchester county. (See class VI, division 2.)

Salle D'Asile et Ecole Primaire de l'Union des Societes Francaises (French Maternal and Primary School). No. 2 South Fifth avenue. (See class III, division 4.)

Shaaray Tefila Sisterhood for Personal Service of Congregation Shaaray Tefila. No. 127 West Forty-fourth street. (See class III, division 1.)

Silver Cross Day Nursery of the Silver Cross Guild of the International Order of the King's Daughters and Sons. No. 2249 Second avenue, near One Hundred and Sixteenth street.—Maintains a kindergarten for older children. (See class III, division 4.)

Sisterhood of the Good Shepherd (Sisters' House Training School for Children). No. 419 West Nineteenth street. (See class V, division 2.)

NEW YORK CITY — (Continued).

Society of St. Johnland. The homes are situated at King's Park, Suffolk county, L. I. (See under New York Homes for Children, class V, division 2.)

Society of St. Martha. No. 34 West Twenty-second street. (See class V, division 2.)

Training School for Girls of the Guardians of the Sisterhood of the Holy Communion. No. 328 Sixth avenue. (See class III, division 2.)

Trinity Church Association. No. 209 Fulton street. (See class III, division 1.)

United Hebrew Charities of the City of New York. No. 128 Second avenue. (See class III, division 1.)

United Relief Works of the Society of Ethical Culture (The). Incorporated 1878, under general statute. School-house, 109 West Fifty-fourth street.—To afford kindergarten, industrial and other education of the children of working people; to support district nursing among the sick poor of the tenement-house districts, and to render such forms of remedial or preventive charity as may be deemed necessary. Non-sectarian. Capacity for 400 pupils in the school. The district nurses make about 2,000 visits annually. Controlled by a board of trustees. Supported by annual subscriptions, donations and entertainments, etc. Leo G. Rosenblatt, president, 25 pine street; Robt. B. Hirsch, treasurer, 600 Park avenue; Louis Seligsberg, secretary, 1021 Park avenue, to whom apply at his address, or to the superintendent at the school.

Wayside Day Nursery. No. 216 East Twentieth street. (See class III, division 4.)

West Side Day Nursery (and Industrial School). No. 266 West Fortieth street. (See class III, division 4.)

Wilson Industrial School for Girls (and Mission). Incorporated 1854, under the general statute. Opened in 1854. No. 125 St. Mark's place, corner of Avenue A and Eighth street.—For industrial training and instruction in English elementary branches of girls, who are too poor to attend the public schools, and as a means for earning their livelihood. The

NEW YORK CITY — (Continued).

garments made during instruction are purchased by the credit marks of the pupils, who are also given a good dinner daily. In connection with the school is a day nursery, open from 7 a. m. to 7 p. m., and caring for about forty babies daily; a free dispensary for the poor of the neighborhood; kitchen garden and cooking garden classes; a circulating library and mothers' meeting. About 350 girls and infants are cared for daily in the school and nursery. Controlled by a board of managers. Supported by voluntary contributions and subscriptions. Mrs. Jonathan Sturges, first directress, 40 East Thirty-sixth street; Mrs. Luther C. Clark, second directress, 14 Gramercy Park; Miss Margaret Collins, third directress, 41 West Eleventh street; Mrs. Charles H. Royce, secretary, 258 West Seventy-fifth street; Mrs. Aaron R. Smith, treasurer, 66 West Thirty-eighth street. Apply to any of the managers or to the matron at the school.

Workingmen's School of the United Relief Works of the Society of Ethical Culture. No. 109 West Fifty-fourth street, which see in this division.

Young Men's Christian Association of the City of New York. General office, No. 40 East Twenty-third street. (See class III, division 1.)

Young Women's Christian Association of the City of New York. Incorporated in 1873, under the general statute. No. 7 East Fifteenth street.—For the improvement of the temporal, social, mental, moral and religious condition of the young women of this city, particularly of those dependent upon their own exertions for support, by procuring employment and safe boarding places, by Bible classes, social and religious meetings, libraries and reading-rooms, and such other means and services as may conduce to the accomplishment of this object. Chief among its benefits are the employment bureau, free classes in writing, bookkeeping, business training, phonography, typewriting, retouching photo-negatives, photo color, etc., mechanical and freehand drawing, clay modeling, applied design, choir music and physical culture; needlework depart-

NEW YORK CITY — (Continued).

ment, with salesroom and order department; and fresh-air fund, which is confined to members of its large Bible class. Controlled by a board of managers. Supported by voluntary contributions and subscriptions. Apply at No. 7 East Fifteenth street, during office hours.

PLATTSBURGH — CLINTON COUNTY.—Home for the Friendless of Northern New York. (See class V, division 2.)

ROCHESTER — MONROE COUNTY.—Industrial School of Rochester. Incorporated April 15, 1857, chapter 457, Laws of 1858. Amendatory act, chapter 290, Laws of 1886. Opened in December, 1856. No. 133 Exchange street.—To gather into the school vagrant and destitute children who, through the poverty and vice of parents, are unable to attend the public schools; to give them a daily dinner and partially clothe them. Such children whose parents can not or will not instruct them or provide for them a comfortable home are taken by the industrial school, trained in industrial pursuits, given elementary and religious instruction, and, when possible, adopted into suitable homes. Idiots and children with contagious diseases are not admitted. Accommodates an average number of eighty house children and fifty-one day children. Controlled by a board of lady managers, with a board of twenty-two directors. Supported by public contributions. Mrs. John W. Oothout, president; Mrs. Gilman H. Perkins, recording secretary, East avenue; Mrs. Emil Kuichling, corresponding secretary, North Clinton street; Mrs. Oscar Craig, treasurer; Gilman H. Perkins, president of board of directors, East avenue. Apply to the children's committee at the institution.

Rochester Home of Industry. No. 712 East Main street. (See class V, division 2.)

TROY — RENSSELAER COUNTY.—Day Home. Incorporated by special act, April 10, chapter 164, Laws of 1861. Name changed from "The Children's Home Society" to "Day

TROY — (Continued).

Home," March 5, 1866. Opened in 1858. Congress street, corner Seventh street.—To benefit needy children, especially such as, from the poverty or vice of their parents, can not properly attend the ward schools. They are instructed and are given a noon-day meal, and efforts are made to elevate and better their physical and moral condition. Any poor or suffering child of suitable age is cared for. Capacity for 100 children. Controlled by a board of managers. Supported by voluntary contributions. Mrs. John A. Griswold, president; Mrs. Joseph Hillmur, first vice-president; Mrs. Wm. E. Gilbert, recording secretary, 165 Second street; Mrs. J. P. Atherton, corresponding secretary, 60 Ferry street; ————, treasurer. Apply to the teacher at the home, or to any of the officers, at any time.

TARRYTOWN — WESTCHESTER COUNTY.—Provident Association of Tarrytown. (See class I.)

WATERVLIET — ALBANY COUNTY.—St. Colman's Industrial School and Orphan Asylum of Watervliet. (See Class V, division 2.)

DIVISION 4.—DAY NURSERIES.

AMSTERDAM — MONTGOMERY COUNTY.—Children's Home Association of Amsterdam, New York. (See class V, division 2.)

BROOKLYN — KINGS COUNTY.—Brooklyn Bureau of Charities. No. 69 Schermerhorn street, and No. 1660 Fulton street. (See class I.)

Children's Aid Society. Branch, No. 139 Van Brunt street. (See class III, division 3.)

Holy Innocent's Union. No. 112 Warren street. (See class III, division 1.)

King's Daughters, International Order of, a Circle of. No. 958 Atlantic avenue.

Industrial School Association of Williamsburg, Branch, No. 480 Humboldt street. (See class III, division 3.)

BROOKLYN — (Continued).

Industrial School Association of Western District, Branch,
Throop avenue, near Ellery street. (See class III, division 1.)

St. Ann's Day Nursery. No. 124 Lawrence street.

St. Christopher's Day Nursery. Incorporated December 12,
1892, under the general statute. No. 124 Lawrence street.
Opened in 1880.—To care for the little children of working
mothers. Average number daily, eighteen. Controlled by
board of fifteen trustees. Mrs. Corlies, president; Mrs.
Glazer, superintendent. No answer was received. Copied
from a directory.

BUFFALO — ERIE COUNTY.—Fitch Creche of the Charity
Organization Society of Buffalo. (See class I.) Not sepa-
rately incorporated. Opened November 8, 1880, at the Fitch
Institute, 159 Swan street.—To provide a day home for
children of legitimate birth, under five years of age, of work-
ing women, in order that they may become bread-winners.
Capacity for sixty. Daily average, thirty-five. During the
year 7,646 children were received in the creche. Controlled
by a committee of the central council of the charity organiza-
tion society and by an advisory committee. Supported by
voluntary subscriptions and appropriations from the Fitch
income held in trust by the above society. Miss M. M. Love,
chairman of committee, 184 Delaware avenue; Mrs. Henry
A. Crane, secretary; Miss E. B. S. Wood, treasurer. Apply
at any time to the charity organization society at above
address.

NEW YORK CITY. Ahawath Chesed Sisterhood of Personal
Service. No. 7 East Third street. (See class III, division 1.)
Bethany Day Nursery of the Manhattan Working Girls' Society.
No. 453 East Fifty-seventh street, which see in this division.
Bethel Society of Personal Service. No. 355 East Sixty-second
street. (See class III, division 1.)
Bethlehem Day Nursery. Incorporated July 11, 1885, under
the general statute. Organized October, 1881. No. 249
East Thirtieth street. Under the auspices of the Church of

NEW YORK CITY — (Continued).

the Incarnation.—To care for children under 7 years of age of needy and respectable working women during working hours, and in the summer season to provide excursions into the country. Kindergarten instruction given and food provided. A charge of five cents daily is made for each child. Open from 7 a. m. to 7 p. m., except Sundays and holidays. Average number of children cared for daily, thirty-three. Last year 9,787 were received. Controlled by a board of managers. Supported by voluntary contributions. Rev. Arthur Brooks, chairman (ex-officio), 209 Madison avenue; Mrs. John H. Hall, president, 559 Fifth avenue; Miss F. A. Smith, secretary, 39 East Thirty-seventh street; Mrs. J. J. Riker, treasurer, 298 Lexington avenue; Miss Perry, matron, to whom apply at the nursery.

Children's Charitable Union. No. 70 Avenue D. (See class III, division 3.)

Day Nursery (Salle D'Asile) of the Ecole Française Gratuite of St. Vincent de Paul's Church. Incorporated. No. 69 South Washington square.—For the care of young French children of working women, from 7 a. m. to 7 p. m. Under the control of the Fathers of Mercy of St. Vincent de Paul. Supported by voluntary contributions. In charge of the Marianites Sisters of the Holy Cross, to whom apply.

Emanuel Sisterhood for Personal Service. Office No. 159 East Seventy-fourth street. (See class III, division 1.)

Grace House Day Nursery and Creche of Grace Protestant Episcopal Church. No. 94 Fourth avenue.—Cares for the children of working women while their mothers are at work, from 6.30 a. m. to 8 p. m., for which a charge of five cents a day is made for each child. Receives from eighty to ninety children each day; also sympathy and practical help is rendered to parents in sickness and sorrow. Controlled and supported by the officers of the church.

Jewell Day Nursery of the "Woman's Branch" of the New York City Mission and Tract Society. No. 20 Macdougall street. Open from 7 a. m. to 5 p. m. (See class VII, division 8.)

NEW YORK CITY — (Continued).

Manhattan Working Girls' Society and Bethany Day Nursery.

Incorporated November 5, 1888, under the general statute.—

The nursery was opened November, 1888, No. 453 East Fifty-seventh street, for the care of children under 6 years of age of needy and working women, who must earn a livelihood or who are unable to care for them. Open from 7 a. m. to 7 p. m. A charge of five cents a day for each child is made to all those able to pay. Average number of children cared for daily, forty-five to fifty; last year 10,830 were received in the nursery. Controlled by the board of managers of the Manhattan Working Girls' Society. Supported by voluntary contributions. The society is designed for girls of good character, dependent on their own resources. Mrs. Richard Stout, president, 102 West Eighty-fourth street; Mrs. E. W. McClare, vice-president, 136 West Fifty-eighth street; Mrs. T. E. F. Randolph, secretary, 180 West Fifty-ninth street; Mrs. E. M. Miller, treasurer, 46 West Seventy-sixth street. Apply to the matron in charge of the nursery or to any of the officers.

Memorial Day Nursery, of the "Woman's Branch" of the New York City Mission and Tract Society. Open from 7 a. m. to 7 p. m. No. 275 East Broadway. (See class VII, division 8.)

New York City Mission and Tract Society, Woman's Branch. United Charities Building, Fourth avenue and Twenty-second street. (See class VII, division 8.)

New York Foundling Hospital. No. 175 East Sixty-eighth street. (See class V, division 2.)

Riverside Day Nursery Association. Incorporated November 31, 1889, under the general statute. No. 121 West Sixty-third street. Opened 1887.—To provide shelter for children during the day, whose parents go out to work and cannot provide proper care at home. Mothers pay five cents a day for each child, and one cent for the kindergarten. Capacity for fifty a day. Average number, 330 a month. Controlled by an executive committee. Supported by subscriptions and contributions. Rev. E. C. Houghton, president, 120 West Sixty-ninth street; Mrs. Alfred Whitman, first vice-president,

NEW YORK CITY — (Continued).

232 West Seventy-sixth street; Mrs. Robert MacArthur, second vice-president, 358 West Fifty-seventh street; Mrs. Percival Knauth (pro tem), secretary, 302 West Seventy-sixth street; Mrs. C. M. Williams, treasurer, 130 West Seventieth street. Apply to Mrs. Busfield, matron, with a doctor's certificate.

St. Agnes' Day Nursery of the Church of the Ascension in the City of New York. Incorporated June 9, 1890, under the general statute. Opened 1888. No. 7 Charles street.—For the moral and physical improvement of healthy children of worthy working mothers, who are charged five cents per day for each child, if able to pay. Capacity for forty-five. Average number received daily, thirty-three. Year's attendance of children, 10,076. Controlled by a board of managers. Supported by voluntary subscriptions and donations. Mrs. Charles H. Wesson, president, 1 West Thirty-seventh street; Mrs. E. W. Donald, vice-president, 7 West Tenth street; Mrs. Wm. Carpender, secretary, 39 West Thirty-third street; Mrs. Leon Marie, treasurer, 33 East Twenty-eighth street. Apply to the matron week days.

St. Barnabas' House of the "New York Protestant Episcopal City Mission Society." No. 306 Mulberry street. (See class III, division 1.)

St. John's Day Nursery of the New York Foundling Hospital. Incorporated, ———. No. 223 East Sixty-seventh street.—For the little children of working women only, who are admitted, cared for and fed from 7 a. m. to 6 p. m. Average daily attendance, fifty. Ladies are also supplied with women for day work. In charge of the Sisters of Charity of St. Vincent de Paul of the Foundling Hospital, assisted by a society of benevolent ladies. Apply daily at the nursery to the sister in charge.

St. Joseph's Day Nursery of New York. Incorporated February, 1890, under the general statute. No. 473 West Fifty-seventh street.—A day home for children from 2 weeks to 7 years of

NEW YORK CITY — (Continued).

age of working women, irrespective of race or religion. Kindergarten instruction and two meals are given daily and a charge of five cents is made for each child to those able to pay. Average attendance, forty-eight. Controlled by a board of trustees. Supported by voluntary contributions and members' dues. Francis C. Travers, president, 107 Duane street; John Chase, vice-president, 38 Park place; G. D. McGausan, corresponding secretary, 421 West Fifty-first street; E. Van Zandt, recording secretary, 348 West Fifty-sixth street; V. P. Travers, treasurer, 127 West Seventy-fourth street. Apply to the matron at the nursery, from 7 a. m. to 7 p. m.

St. Patrick's Day Nursery. Attached to St. Patrick's Schools. Mott and Prince street.—Children are received from 7 a. m. to 6.30 p. m. Average daily attendance, sixty-five. In charge of the Sisters of Charity.

St. Thomas' Day Nursery. No. 231 East Fifty-ninth street. Open week-days from 7 a. m. to 6.30 p. m. Under the control of St. Thomas' Chapel.

Salle D'Asile et Ecole Primaire de l'Union des Societes Francaise (French Maternal and Primary School). Incorporated in 1885 under the general statute. No. 2 South Fifth avenue. Maintains a kindergarten, primary school and day nursery for French children from 3 to 8 years of age. Open from 7 a. m. to 7 p. m. Parents when able to do so pay thirty-one cents a week, and the children are given a warm meal daily. Controlled by a board of managers. Supported by voluntary contributions. Apply at the school at any time.

Silver Cross Day Nursery, of the Silver Cross Guild of the International Order of the King's Daughters and Sons. Incorporated in 1888 under the general statute. The nursery was opened November 3, 1890. No. 2249 Second avenue, near One Hundred and Sixteenth street.—To afford shelter and good care for the little children of deserving working women, who, when able, pay five cents per day for each child. Open week-days from 7 a. m. to 7 p. m. The object

NEW YORK CITY — (Continued).

of the Silver Cross Guild shall be the maintenance and establishment of day nurseries, kindergartens and other agencies for the benefit of needy women and children living in Harlem and its vicinity, and it maintains at present a kindergarten for older children in connection with the nursery. Average number of inmates daily about thirty. Controlled by a board of managers composed of members of the International order, representing the various Protestant churches of Harlem and vicinity. Mrs. E. D. Gillette, president, 2101 Fifth avenue; Miss L. L. Buxton, corresponding secretary, 159 West One Hundred and Twenty-sixth street; Miss E. M. Gillette, recording secretary, 2101 Fifth avenue; Mrs. E. P. Whitehorne, treasurer, 64 West One Hundred and Twenty-sixth street. Apply for admission to Mrs. Frank E. Blanchard, 2116 Madison avenue, or to any member of the guild.

Sunnyside Day Nursery. Incorporated April 18, 1888, under the general statute. Nos. 49 and 51 Prospect place, between Forty-second and Forty-third streets and First and Second avenues.—For the care and instruction of the children of poor working mothers unable to care for them during the day, and who pay five cents a day for each child. Capacity for sixty-five. Average number thirty-five daily. Ten thousand four hundred and eighty-seven children were cared for last year. Controlled by a board of managers. Supported by voluntary contributions. Mrs. Gaspar Griswold, president, 14 West Twenty-first street; Miss Cuyler, vice-president, 214 Madison avenue; Miss Tonance, secretary, 379 Fifth avenue; Miss Louise Morgan, treasurer, 219 Madison avenue. Apply to Miss J. T. Jellison, matron, throughout the day at the nursery.

Virginia Day Nursery of the "Woman's Branch" of the New York City Mission and Tract Society. No. 632 Fifth street. Open from 7 a. m. to 7. p. m. (See class VII, division 8.)

Wayside Day Nursery. Incorporated September, 1887, under the general statute. No. 216 East Twentieth street.—To care for and teach the children of working women from

NEW YORK CITY — (Continued).

2 weeks to 7 years of age, during the day, for which a charge of five cents per diem is made for each child, which is admitted after examination by the physicians. Classes in needlework, housework and cooking are also held for older girls after the sessions of the public schools are closed; and members are benefited in summer by a two weeks' vacation at Sea Cliff, L. I. Controlled by twelve trustees and supported by voluntary contributions. Accommodates fifty; average number of infants thirty-eight and one-half daily; 11,164 beneficiaries last year. Mrs. Pierrepont Edwards, president, 107 East Thirty-fourth street; Mrs. M. Taylor Pyne, vice-president; Mrs. Gordon Wendell, secretary, 126 East Thirty-fifth street; Miss Teresa Damon, treasurer, 11 Park avenue; Mrs. Carroll, matron, to whom apply at the nursery.

West Side Day Nursery (and Industrial School). Incorporated May 12, 1884, under the general statute. Opened April, 1883, No. 266 West Fortieth street.—For the gratuitous care of very young children of the poor during the day, while their mothers are at work away from home, irrespective of color or creed, and to provide a refuge after school hours for young girls from 8 to 16 years of age, who are taught household work, cooking, sewing, dressmaking, knitting, mending, etc., and for which instruction each girl contributes ten cents a week. Daily average attendance in the nursery, thirty-one; in the industrial department, forty-eight. Controlled by a board of trustees. Supported by voluntary contributions. Jacob D. Vermilye, president, 4 West Fifty-first street; Wm. Armory, secretary and treasurer, 111 West Fifty-seventh street; Mrs. Wm. Armory, president of ladies' committee; Mrs. James Struthers, secretary, 113 West Twelfth street; Mrs. E. A. Pratt, matron, to whom apply at the nursery at any time.

Wilson Industrial School for Girls (and Mission). No. 125 St. Mark's place, corner of Avenue A and Eighth street. (See class III, division 3.)

DIVISION 5.—TEMPORARY HOMES FOR CHILDREN AND YOUNG GIRLS.

BROOKLYN—KINGS COUNTY.—Brooklyn Children's Aid Society. General offices, No. 61 Poplar street. Newsboys' Home. (See class III, division 3.)

Brooklyn Industrial School Association and Home for Destitute Children. Sterling place, near Vanderbilt avenue. (See class III, division 3.)

Brooklyn Nursery and Infants' Hospital. No. 396 Herkimer street. (See class VII, division 4.)

Brooklyn Society for the Prevention of Cruelty to Children. No. 105 Schermerhorn street. (See class IV, division 3.)

Brooklyn Training School and Home for Young Girls. Incorporated April 12, 1889, under the general statute. No. 336 Fourteenth street, between Sixth and Seventh avenues, formerly at 80 Livingston street.—To aid respectable, friendless, young girls, between the ages of 12 and 21 years, to help themselves, by providing for them a temporary home where they may be guided and trained to be self-supporting, so long as they comply with the rules and regulations of the home. Those who are able, or have friends to assist them, pay two dollars a week. Girls are received also from the "Society for Prevention of Cruelty to Children," and also county wards. Applications for the admission of girls under 12 years of age, are referred to the Eastern and Western Industrial School Associations and the Orphan Asylum Society. Capacity for twenty. Average number of inmates, eighteen. Controlled by a board of managers. Supported by voluntary contributions. Mrs. M. T. Maine, president, 24 Seventh avenue; Mrs. K. K. Sumner, first vice-president, 36 Eighth avenue; Mrs. C. A. Ryder, second vice-president, 529 Third street; Mrs. Edward B. Jordan, recording secretary, 373 Union street; Mrs. A. R. Calhoun, corresponding secretary, 174 Sixth avenue; Mrs. T. Conrow, treasurer, 215 St. John's place. Apply to the chairman of the reception committee in person, at the home.

BROOKLYN — (Continued).

from 11.30 a. m. to 2.30 p. m., every Thursday, or by letter at any time.

Helping Hand of Brooklyn. No. 136 Lawrence street. (See class VIII, division 5.)

Industrial School Association of Brooklyn, E. D. Nos. 141 to 153 South Third street. (See class III, division 3.)

Loretto House of the "St. Mary's Lodging-house for Sheltering Respectable Girls" of the City of New York. Incorporated May, 1881, under the general statute. No. 56 Livingston street.—A home for the protection and comfort of respectable, self-supporting women, who, being employed, but without parents or friends in the city, are boarded at prices proportionate to their means. Capacity for fifty. Controlled by a board of trustees and a charitable association of ladies, known as the "Friends of the Homeless." Supported by board of inmates and voluntary contributions. Miss Susan Osborne, president; Miss Susan L. Hayes, secretary. Apply to the matron in charge at the home at any time.

St. Peter's Home for Working Girls. Incorporated November 10, 1890, under the general statute. Opened March, 1890. Nos. 102 to 112 Congress street.—To assist working girls, and to provide safe lodgings for homeless and destitute girls or those out of employment. Transient relief is afforded to any deserving, needy female, but a small weekly charge is made to those who are able to pay it. Capacity for 100. Average number of inmates, seventy. There were 2,028 outdoor and indoor beneficiaries last year. Controlled by a community of sisters of St. Joseph. Supported by donations, board of inmates, and an appropriation from excise fund. The trustees are: Rt. Rev. Charles E. McDonnell, D. D., Bishop Rev. John T. Barry (St. Peter's Church), Mary E. Mullen (Mother M. Theresa), Flushing; Jane Keating (Mother M. de Chantel), St. John's Home; and Catherine Gillespie (Sister M. Raphael), at the home, to whom apply at any time.

St. Vincent's Home of the City of Brooklyn. No. 7 Poplar street. (See class V, division 2.)

BROOKLYN — (Continued).

Sheltering Arms Nursery of Brooklyn. No. 157 Dean street.

(See class V, division 2.)

Society for the Aid of Friendless Women and Children. No. 20

Concord street. (See class III, division 6.)

BUFFALO — ERIE COUNTY.—Buffalo Children's Aid Society.

No. 29 Franklin street. (See class III, division 1.)

Newsboys and Bootblacks' Home of the Buffalo Children's Aid

Society. No. 29 Franklin street. (See under class III, division 1.)

Queen City Society for Prevention of Cruelty to Children. No.

55 Franklin street. (See class IV, division 3.)

Working Boys' Home of the Sacred Heart. Incorporated in

1889, under the general statute. No. 35 Niagara square.

Rev. Daniel Walsh in charge. No information has been received from them to be inserted in the directory.

LOCKPORT — NIAGARA COUNTY.—Lockport Home for the

Friendless. No. 387 High street. (See class V, division 2.)

MINEOLA — QUEENS COUNTY.—Temporary Home for Chil-

dren of Queens County, New York. (See class V, division 2.)

NEWBURGH — ORANGE COUNTY.—Children's Home, City and

Town of Newburgh. Branch of the alms-house. No. 68 High street. (See class V, division 2.)

Newburgh Home for the Friendless. No. 165 Montgomery

street. (See class V, division 2.)

NEW YORK CITY.—American Female Guardian Society and

Home for the Friendless. No. 32 East Thirtieth street, and 29 East Twenty-ninth street. (See class III, division 1.)

Association for Befriending Children and Young Girls. Incorporated ———, 1870, under the general statute. Amend-

tory act passed June twenty-sixth, chapter 598, Laws of 1880. House of the Holy Family opened March 25, 1870, at Nos. 136 and 138 Second avenue. Branch home, House

NEW YORK CITY — (Continued).

of Nazareth recently opened at White Plains.—For the reformation of young girls and the rescue and protection of children exposed to evil influences, by gathering these two classes in institutions and schools for instruction, industrial, intellectual and religious, and for the visitation of prisons, hospitals, and the homes of the poor, in pursuance of the same ends. Children must be over 3 years of age, and young girls, under 25, feeling the need of reformation and protection, must come willingly, whether committed, or on their own application, and must remain at least six months. The two classes are kept strictly separate, and no charge is made. Laundry work and fine sewing is done, both for education and income. Capacity of House of the Holy Family, 200; of the House of Nazareth, 150. Average number of inmates, in the former, 150. Total number cared for last year, 338. Controlled by a board of managers, aided by an advisory committee administered by the Sisters of the Divine Compassion. Supported by voluntary contributions, labor of inmates and per capita allowance from the public fund of one dollar a week for inmates not committed, and two dollars for committed children. Mrs. Thomas Addis Emmet, president, 89 Madison avenue; Mrs. George V. Hecker, vice-president, 278 Madison avenue; Mrs. Walter D. Starr, secretary, West Eighty-sixth street and Riverside drive; Mrs. Catherine Colville, treasurer, 48 West Twentieth street. Apply personally or through persons interested in them, to the sister Superior, at either of the institutions, daily from 9 a. m. to 6 p. m.

Children's Aid Society. United Charities Building, Fourth avenue and Twenty-second street. The Elizabeth Home and Training School for Girls, and Boys' Lodging House. (See class III, division 3.)

Five Points House of Industry. Incorporated March 11, 1854, under the general statute. Amendatory laws chapter 90, Laws of 1866 and chapter 597, Laws of 1880. Institution opened in 1850 at No. 155 Worth street.—The particular

NEW YORK CITY — (Continued).

objects and purposes of the association are to assist the destitute to support themselves, by providing for them employment, protection and instruction, according to their necessities; to provide partial or entire support, with suitable instruction, to children and others incapable of self-support, and not satisfactorily provided for by their parents, guardians or by existing institutions; to imbue the objects of its care with the pure principles of Christianity, as revealed in the Holy Scriptures, without bias from the distinctive peculiarities of any individual sect. Devoted mainly to the preservation of children from suffering and crime. Furnishes a home, support and religious and secular instruction for neglected and abandoned children. Also boards children of poor parents at a nominal rate. It shelters women while seeking work as servants, who meanwhile do the work of the institution, and temporarily relieves in their homes urgent adult cases living in the vicinity. No vicious children are taken. Capacity for 384. Average number of inmates, 311. There is a day school with classes for manual and domestic training; the children are both fed and taught. Over 1,200 pupils last year. Also an infirmary and free dispensary, at 147 Worth street, for the children and adults at and around the "Five Points." Controlled by an unsectarian board of trustees. Supported by voluntary contributions and public funds. Morris K. Jessup, president, 197 Madison avenue; Geo. F. Betts, secretary, 102 Madison avenue; Hugh N. Camp, treasurer, Fordham Heights; Wm. F. Barnard, superintendent, 155 Worth street, to whom apply at any time.

Florence Crittenton Home (The). Incorporated in May, 1893. Opened April 6, 1891, at No. 140 East Fourteenth street.—To maintain a home for and to assist respectable, virtuous, working girls and women, exclusively, in earning a livelihood. Accommodates twenty. Average number of inmates, seventeen. Controlled by the founder, Charles N. Crittenton, and officers. Sup-

NEW YORK CITY — (Continued).

ported by the founder and A. W. Dennett, and by the board of inmates. A. S. Hatch, Edward Sketchley, James W. Pierce and F. B. Waterman, advisory board; James R. Johnston, superintendent; Mrs. E. G. Underhill, matron. Apply at 140 East Fourteenth street, at any time.

Free Home for Destitute Young Girls. Incorporated December 9, 1870, under the general statute, as "The Woman's Aid Society and Home for Training Young Girls." Name changed to present title by special act, February fifteenth, chapter 24, Laws of 1878. Organized in 1867. No. 23 East Eleventh street.—To afford gratuitous aid to indigent and destitute females, and especially to provide a temporary home for poor and friendless girls who are exposed to the temptations of the city, and after sufficient instruction, to provide them with permanent positions in Christian families. For young girls from 12 to 25 years of age of respectable character. Capacity for forty. Average number of inmates, twenty. Eighty-five beneficiaries last year. Controlled by a board of twenty-six managers. Supported by voluntary contributions. Mrs. J. W. Baker, first directress, 129 West Eleventh street; Mrs. H. K. Thurber, second directress, 146 West Twelfth street; Mrs. Henry W. Johnson, secretary, 105 East Eighteenth street; Mrs. Robert Sewell, treasurer, 68 West Forty-fifth street. Apply to the matron at the home or to any of the officers.

Hebrew Sheltering Guardian Society of New York (Orphan Asylum). Grand boulevard and One Hundred and Fifty-first street. (See class VIII, division 6.)

Home for Fallen and Friendless Girls (Wetmore Home). No. 49 South Washington square. (See class VIII, division 5.)

Howard Mission and Home for Little Wanderers. No. 206 Fifth street. (See class III, division 1.)

Institution of Mercy. No. 1075 Madison avenue. (See class V, division 2.)

Messiah Home for Little Children. No. 4 Rutherford place, near East Sixteenth street. (See class V, division 2.)

NEW YORK CITY — (Continued).

Mission of the Immaculate Virgin for the Protection of Homeless and Destitute Children. Lafayette place, corner of Great Jones street. (See class V, division 2.)

New York Colored Mission. No. 135 West Thirtieth street. (See class III, division 1.)

New York Foundling Hospital. No. 175 East Sixty-eighth street. (See class V, division 2.)

New York Home for Convalescents. No. 433 East One Hundred and Eighteenth street. (See class VII, division 2.)

New York Society for the Prevention of Cruelty to Children. No. 100 East Twenty-third street. (See class IV, division 3.)

Nursery and Child's Hospital. No. 571 Lexington avenue, corner Fifty-first street. (See class VII, division 4.)

St. Barnabas' House of the "New York Protestant Episcopal City Mission Society." No. 306 Mulberry street. (See class III, division 1.)

St. Chrysostom's Nursery. Incorporated January 20, 1892, under the general statute. Opened October 15, 1890. No. 260 West Thirty-seventh street. For the care of healthy young children, between 2 and 10 years of age, without regard to race, creed or color, particularly those whose mothers are in hospitals. A small amount is charged for board, except in cases of destitution. Capacity for thirty. Average number of inmates, twenty-five. Controlled by a board of trustees. Supported by voluntary charities. Rev. W. E. Johnson, president, Park avenue and Eighty-first street; Miss M. L. Post, secretary, 341 West Fifty-first street; Mrs. Clara Conley, treasurer. Apply to the president or superintendent, at the nursery, daily, except Mondays, from 10 to 12 a. m.

St. Joseph's Industrial Home of the Institution of Mercy. Northeast corner of Eighty-first street and Madison avenue. (See class V, division 2.)

St. Mary's Lodging-house. Incorporated in May, 1881, under the general statute. Opened in 1877. No. 143 West Fourteenth street.—For the protection and comfort of respectable young women while seeking employment. The entire conduct

NEW YORK CITY — (Continued).

of this benevolent work is in the hands of a secular charitable association of ladies, entitled "The Friends of the Homeless," who maintain the "St. Mary's Lodging-house," at No. 143 West Fourteenth street, for respectable young women, while seeking positions, artists, companions, typewriters, composers, dressmakers, seamstresses, shop girls, operators and others not properly domestic servants, irrespective of creed or nationality, but references are required. Also, "St. Clare's House," at No. 135 West Fourteenth street.—For respectable self-supporting young women on small salaries, having no homes of their own, who can find board according to their means. "St. Joseph's Night Shelter," at No. 144 West Fifteenth street, is free to homeless women; no questions are asked, nor are notes needed from patrons, nor money to secure food or a bed. The "Loretto House," at No. 56 Livingston street, Brooklyn, is also for respectable self-supporting young women on small salaries, having no homes of their own, who can find board according to their means. Outfits are given to enable young women to present a respectable appearance when seeking employment. During last year, 2,818 were received in St. Mary's Lodging-house, and 1,798 placed in situations; in St. Joseph's shelter, 5,284 were sheltered and 3,002 were placed in situations, and 18,214 meals were given to outside poor. Controlled by a board of trustees and the "Sisters of the Friendless." Supported by voluntary contributions, donations, municipal appropriations, work of inmates, etc. Miss Susan M. Osborne, president; Miss Esther L. Hayes, secretary. Apply to the president, at No. 143 West Fourteenth street, at any time.

Shelter for Respectable Girls. Incorporated December 2, 1880, under the general statute. The home was opened in April, 1871. Nos. 148 and 150 West Fourteenth street.—To afford a safe, cheap and comfortable Christian home to independent working girls while seeking employment; to afford a secure place of refuge for respectable girls who, while out of work, and cut off from the protection of families, are often pursued

NEW YORK CITY — (Continued).

by the unscrupulous, and are exposed to special temptations; to give all the inmates of the house the safe friendship, counsel and assistance of the sisters in charge, in gaining and maintaining a respectable womanhood. For respectable girls, bringing satisfactory references, or who can give suitable assurances as to good character, who are needing a home and protection, irrespective of creed or nationality; and to train young girls for domestic service. All applicants are expected to pay, if able to do so, a weekly rate of board, which in no case exceeds four dollars, but no one is declined owing to inability to pay any or only partial board. Capacity for fifty-two. Average number of inmates, forty. About 606 were cared for last year, of whom seventy-six paid no board. Controlled by a board of trustees with a board of lady associates. Supported by voluntary contributions, donations and board of inmates. Rt. Rev. Henry C. Potter, D. D., visitor; Rev. George S. Baker, D. D., president, St. Luke's Hospital, Fifth avenue and Fifty-fourth street; Hoffman Miller, secretary; Sister Catherine, treasurer, 148 West Fourteenth street, to whom apply in person or by letter, from 8 a. m. to 8 p. m.

Sheltering Arms. West One Hundred and Twenty-ninth street and Amsterdam avenue. (See class V, division 2.)

Society for Befriending Self-Supporting Women. No. 356 West Thirty-third street. (See class III, division 6.)

Swiss Benevolent Society of New York. No. 108 Second avenue. (See class III, division 8.)

Temporary Home for Women. No. 84 Second avenue. (See class III, division 6.)

Westchester Temporary Home for Destitute Children, at White Plains, Westchester county, receives children from New York city temporarily to board. (See class V, division 2.)

Young Women's Home of the Ladies' Christian Union of the City of New York. Incorporated in 1866. Nos. 27 and 29 Washington square, north.—A boarding-house with home-like comforts for young unmarried women, who are self-sup-

NEW YORK CITY — (Continued).

porting, at prices proportionate to their salary. Capacity for eighty-two. Under the control of a board of managers. Apply to the house committee at the above address. (Copied from the New York Charities' directory, as no reply has been received.)

POUGHKEEPSIE — DUTCHESS COUNTY.— Poughkeepsie Orphan House and Home for the Friendless. Corner South Hamilton and Franklin streets. (See class V, division 2.)

ROCHESTER — MONROE COUNTY.— Industrial School of Rochester. No. 133 Exchange street. (See class III, division 3.)

TROY — RENSSELAER COUNTY.— Helping Hand Mission (and Galilean Home). No. 123 River street. (See class VIII, division 5.)

WHITE PLAINS — WESTCHESTER COUNTY.— House of Nazareth of the "Association for Befriending Children and Young Girls" under the Sisters of Divine Compassion (which see under New York city, in this division). Three hundred inmates.

Westchester Temporary Home for Destitute Children. (See class V, division 2.)

WATERVLIET — ALBANY COUNTY.— (West Troy P. O.) Fairview Home for Friendless Children. (See class V, division 2.)

YONKERS — WESTCHESTER COUNTY.— Yonkers Nursery and Home. No. 176 Palisade avenue. (See class V, division 2.)

DIVISION 6.—TEMPORARY HOMES FOR WOMEN,
ALSO FOR ADULTS.

ALBANY — ALBANY COUNTY.— Albany Guardian Society and Home for the Friendless. No. 553 Clinton avenue. (See class V, division 3.)

House of Shelter. Howard street, corner of Wendell. (See class VIII, division 5.)

BINGHAMTON — BROOME COUNTY.— Chapel and House of the Good Shepherd. (See class V, division 3.)

BROOKLYN — KINGS COUNTY.—Norwegian Relief Society.

Fourth avenue and Fortieth street. (See class III, division 8.)

Scandinavian Sailors' Temperance Home. (See class VII, division 8.)

Society for the Aid of Friendless Women and Children. Incorporated by special act, April twenty-eighth, chapter 472, Laws of 1870. Institution opened in 1870. No. 20 Concord street.—To aid destitute and friendless women and children to help themselves, by providing a temporary home, where they may receive proper moral and intellectual culture, until they shall be provided for otherwise; to find them employment and a home where their services are needed, surrounded by social and moral influences. Children under 15 years of age may be surrendered or intrusted to the society, and whether bound out or indentured into respectable homes, they shall be under its care and supervision until they are of age. Disorderly or reformatory cases are not received. Capacity of the home for 100. Average number of inmates, eighty. Last year 988 inmates were assisted, 91,409 meals were given and 30,504 lodgings provided. Controlled by a board of managers, chosen from the different churches and religious denominations of Brooklyn, with an advisory board and an executive committee. Supported by voluntary contributions and by a small appropriation from excise fund. Mrs. A. C. Barnes, president, 114 Pierrepont street; Mrs. S. V. White, first vice-president, 210 Columbia street; Mrs. D. P. Clapp, second vice-president, 111 Hicks street; Mrs. J. S. T. Stranahan, corresponding secretary, 269 Union street; Mrs. H. S. Anderson, recording secretary, 564 Henry street; Mrs. J. B. Blossom, assistant recording secretary, 440 Henry street; Mrs. F. B. Candler, treasurer, 11 Monroe place. Apply in person to the matron at the home, or to any officer or manager.

Wayside Home. No. 352 Bridge street. (See class VIII, division 5.)

BUFFALO — ERIE COUNTY.—Buffalo Children's Aid Society.

No. 29 Franklin street. (See class III, division 1.)

BUFFALO — (Continued).

Guard of Honor Library and Christian Institute. Incorporated January 8, 1872, as "The Guard of Honor." Name changed to present title October 14, 1885, by order of the Supreme Court, in pursuance of provisions of chapter 343, of the Laws of 1875. Organized in March, 1868. Nos. 620 and 622 Washington street.—For the religious, moral and intellectual instruction of all those (young men in particular) who shall avail themselves of its privileges. Free lodgings are given to respectable and worthy young men under 35, temporarily, not longer than seven consecutive nights, except by special permission of the house committee or directors. Capacity, thirty-five rooms, twenty-three of which are free. Last year, 458 men received 1,967 nights' lodging. Controlled by board of trustees. Supported by members' fees and rent of stores. Charles Holzworth, president, 156 Van Rensselaer street; Ralph Bowman, secretary, 62 Tracy street; James Hall, financial secretary, 158 Sixteenth street; Thos. Grimshaw, treasurer, 90 Niagara street. Apply for lodgings to the superintendent at the institute each night from 7 to 10 o'clock.

N. B.—The society proposes this year taking legal steps to return to first charter, as it is no longer a public library, but owns its own building.

Home for the Friendless. No. 1500 Main street. (See class V, division 3.)

ELMIRA — CHEMUNG COUNTY.—The Anchorage. No. 955 College avenue. (See class VIII, division 5.)

HOMER — CORTLAND COUNTY.—Cortland Home for Aged Women. (See class V, division 3.)

NEW YORK CITY.—American Female Guardian Society and Home for the Friendless. No. 32 East Thirtieth street and 29 East Twenty-ninth street. (See class III, division 1.)

American Seamen's Friend Society. No. 76 Wall street. (See class III, division 8.)

Colored Home and Hospital of the City of New York. (See class V, division 3.)

NEW YORK CITY — (Continued).

Emigrant's House of the Lutheran Emigrants' House Association of New York. No. 26 State street. (See class III, division 8.)

Five Points House of Industry. No. 155 Worth street. (See class III, division 5.)

Free Home for Destitute Girls. No. 23 East Eleventh street. (See class III, division 5.)

French Benevolent Society of the City of New York. Nos. 320 and 322 West Thirty-fourth street. (See class III, division 8.)

Florence Crittenton Home, 140 East Fourteenth street. (See class VIII, division 5.)

Home for Fallen and Friendless Girls (Wetmore Home). No. 49 South Washington square. (See class VIII, division 5.)

Home Hotel Association. One Hundred and Thirty-fifth street and St. Ann's avenue. (See class IV, division 3.)

Home of Industry and Refuge for Discharged Convicts. No. 224 West Sixty-third street. (See class VIII, division 4.)

Industrial Christian Alliance. No. 113 Macdougall street. (See class III, division 2.)

Italian Home (Istituto Italiano). No. 179 Second avenue. (See class III, division 8.)

Margaret Strachan Home for Fallen Women. Nos. 103 and 105 West Twenty-seventh street. (See class VIII, division 5.)

New York Bible and Fruit Mission to Our Public Hospitals. Nos. 416 to 422 East Twenty-sixth street.—Maintains a lodging-house and coffee-house. (See class IV, division 4.)

New York Colored Mission. No. 135 West Thirtieth street. (See class III, division 1.)

New York Home for Convalescents. No. 433 East One Hundred and Eighteenth street. (See class VII, division 2.)

Nursery and Child's Hospital. No. 571 Lexington avenue, corner of Fifty-first street. (See class VII, division 4.)

Riverside Rest Association (The). No. 310 East Twenty-sixth street.—To provide a temporary home for women recently discharged from the public institutions on Blackwell's island, New York city, and others; to provide them with permanent

NEW YORK CITY — (Continued).

employment. Applicants must show a willingness to conform to the rules of the house and to do sewing and laundry work. Capacity for and average number of inmates, twenty-five. Over 330 were assisted last year. Controlled by a board of managers. Supported by voluntary contributions and proceeds from the laundry work. Rev. Wendell Prime, D. D., president; Wm. M. F. Round, first vice-president, 135 East Fifteenth street; Mrs. Henry Villard, second vice-president, 175 West Fifty-eighth street; Mrs. James T. Whittlesey, secretary, 1278 Third avenue; Edward Edes, treasurer, Mills Building, Broad street. Apply to the matron in charge at any time.

St. Barnabas' House of the "New York Protestant Episcopal City Mission Society." No. 306 Mulberry street. (See class III, division 1.)

St. Mary's Lodging-house. No. 143 West Fourteenth street. (See class III, division 5.)

St. Zita's Home for Friendless Women of the City of New York. (See class VIII, division 5.)

Society for Befriending Self-supporting Women. Incorporated in 1886 under the general statute, as "The Society for Aiding Self-supporting Women." Reincorporated February 4, 1891, under the general statute under present title. Organized in 1883. Maintains a home at 356 West Thirty-third street.—To befriend self-supporting women, to aid them in finding employment, to afford temporary relief in cases of necessity, and to provide homes for them, governed by proper rules and regulations. Particularly for such teachers, copyists, artists, saleswomen, seamstresses, etc., whose remuneration is small. Capacity of home for forty. Average number of inmates, thirty-two. Controlled by a board of trustees. Supported by voluntary contributions, and board of inmates. Wm. B. Aitken, Ph. D., president, 702 Madison avenue; Mrs. James F. Lewis, vice-president, 35 Mt. Morris avenue; John C. Mitchell, secretary, 55 West Thirty-third street; Stephen W.

NEW YORK CITY — (Continued).

Collins, treasurer, 69 Wall street. Apply to the matron at the home, No. 356 West Thirty-third street.

Temporary Home for Women. Incorporated March 30, 1887, under the general statute. Opened in 1883. No. 84 Second avenue.—To provide temporary shelter at the lowest possible price, for respectable, homeless women seeking employment; also to supply good, clean and cheap food for all women who wish to avail themselves of such provision. Applicants must be sober, respectable, and able to pay the small sum required for lodging and food. During the year, the beds were rented by adults 11,517 times, and occupied by children 541 times; 19,920 meals were furnished in the restaurant, at an average price of ten cents a meal. Capacity for forty-five inmates; average number, thirty-five. Controlled by a board of officers, managers. Supported by receipts from lodging and restaurant, and by private contributions from the board. Frederick D. Tappen, president, 36 Wall street; Mrs. Charles Duggin, vice-president, 310 Madison avenue; Mrs. Henry W. Monroe, secretary and treasurer, 6 East Fifty-fifth street. Apply to Mrs. E. B. Thornton, matron, at the home before 10.30 p. m.

United Hebrew Charities of the City of New York. No. 128 Second avenue. (See class III, Division 1.)

Woman's Charity and Industry Club and Home for Friendless Colored Girls, Henry Highland Garnett Home. Incorporated March 20, 1889. No. 221 West Thirty-seventh street.—To care for the sick and needy; to provide a temporary home, industrial employment, and, if necessary, a respectable burial to worthy, needy colored women and girls. Mrs. Jane Chase, secretary; Mrs. Anne Harris, superintendent, to whom apply at the home.—Copied from the "New York Charities' Directory," as no reply has been received.

Young Woman's Society of the French Evangelical Church in the City of New York. Incorporated October 7, 1890, under the general statute. Organized in 1888. Opened October,

NEW YORK CITY — (Continued).

1890. No. 341 West Thirtieth street. Maintains the French Evangelical House for Young Women.—To provide respectable, unemployed teachers, governesses and domestics, with a home and board, and also in case of need, with clothing, money and medical attendance, and to procure employment for them gratuitously. Especially for respectable women of French birth. Capacity of home for twenty-four. Average number of inmates, fifteen. Controlled by a board of trustees. Supported by board of inmates and voluntary contributions. C. H. Jacot, president, 298 Broadway; Aug. Houriet, vice-president, 41 Maiden lane; Mrs. J. E. Roberts, secretary, 66 West Seventy-first street; J. Eugene Robert, treasurer, 19 Maiden lane; Miss Clemence Fallet, matron, to whom apply from 10 a. m. to 4 p. m. at the home, No. 341 West Thirtieth street.

ROCHESTER — MONROE COUNTY.—Rochester Home for the Friendless. East avenue, corner of Alexander street. (See class V, division 3.)

SYRACUSE — ONONDAGA COUNTY.—Shelter for Homeless Women. Roberts avenue. (Class VIII, division 5.)

Sisters of Charity of the House of Providence. Grand avenue. (See class V, division 2.)

TROY — RENSSELAER COUNTY.—Helping Hand Mission (and Galilean Home for Women. No. 123 River street. (See class VIII, division 5.)

DIVISION 7.—SUMMER HOMES, FRESH-AIR CHARITIES, SEA AND COUNTRY EXCURSIONS.

BATH BEACH — KINGS COUNTY.—Sea-side Home of Children's Aid Society of New York. (See class III, division 3.)

BROOKLYN — KINGS COUNTY.—Brooklyn Children's Aid Society. General offices, No. 61 Poplar street. (See class III, division 3.)

BROOKLYN — (Continued).

Working Women's Vacation Society of Brooklyn. Incorporated ———. Organized 1885. No. 172 South Ninth street.— Assists needy women and children, who are recommended by some responsible party, by giving them two weeks' vacation in the country; supplies traveling expenses to friends in the country, and also day excursions. Controlled by a board of managers. Supported by dues of members, contributions and other voluntary donations. Nine hundred and six beneficiaries in 1891. Rev. J. H. Darlington, president; Mrs. W. H. H. Austin, vice-president, 107 Keep street; Mrs. J. H. Darlington, corresponding secretary, 481 Bedford avenue; Miss E. L. Klots, recording secretary, 83 Keep street; Miss M. B. Burgess, treasurer. Apply to the corresponding secretary.

BUFFALO — ERIE COUNTY.—Fresh Air Mission of Buffalo.

Incorporated April 14, 1890, under the general statute. Organized July 7, 1890, Mission Farm, at Angola, Erie county.— To give the worthy poor, and especially the children of such persons free from infectious diseases and living in the city of Buffalo, the benefit and enjoyment of fresh air in the country. Capacity for 110. Average number of inmates, 100. Three hundred and eighty-six were entertained for fourteen days each on the Mission Farm, and 110 children were placed in country homes during the season. Controlled by a board of trustees. Supported by voluntary subscriptions. P. H. Griffin, president, 190 Summer street; Marc W. Comstock, secretary, 10 Allen street; Henry W. Sprague, treasurer, 29 Cottage street; Paul C. Ransom, general manager, No. 1298 Main street, to whom apply at any time, or to the chairman of the committee on children.

FARMINGDALE — QUEENS COUNTY.—St. Andrew's Cottage for Boys of "The Order of Brothers of Nazareth." (See class VII, division 2.)

ISLIP — SUFFOLK COUNTY.—Summer Home of Trinity Church Association of New York. Situated at Great River. (See class III, division 1.)

NEW YORK CITY—American Female Guardian Society and Home for the Friendless. No. 32 East Thirtieth street and 29 East Twenty-ninth street. (See class III, division 1.)

Bartholdi Creche (The). Incorporated January 25, 1890, under the general statute. Opened in 1886, and located in 1886 to 1890, inclusive, on Bedloe's island, New York harbor; in 1891, on Ward's island, East river.—To meet the needs of poor children under 12 years of age, and their enfeebled mothers who can not leave their homes to stay over a night, or even all day, at any of the more distant fresh-air resorts. Open during July, August and September only. Children over 12, or those afflicted with contagious diseases are excluded. About 100 beneficiaries daily. Supported by voluntary contributions. Controlled by the following committee: John H. Boynton, of the New York Protestant Episcopal City Mission Society, chairman, 38 Bleecker street; Mrs. W. Harmon Brown, of the Charity Organization Society, 111 East Sixteenth street; Dr. Annie S. Daniel, of the New York Infirmary for Women and Children, medical director, 327 East Fifteenth street; Mrs. L. S. Bainbridge, of the New York City Mission Society, secretary and treasurer, United Charities Building, Fourth avenue and Twenty-second street. Apply at any office of the Charity Organization Society of New York City, daily, except Sundays and holidays.

Bureau of Works and Charities of All Souls' Church (Memorial of Rev. Henry Anthon, D. D.). Incorporated March 25, 1884, under the general statute. Maintains a summer home opened June 20, 1884, at Sea Cliff, Long Island.—To provide a home for two weeks in the summer for poor children over 4 and under 14 years of age, free from contagious diseases. Capacity for 100. Last year 700 children were cared for. Controlled by a board of trustees. Supported by contributions, chiefly from All Souls' church of New York. Edward M. Brown, president; Alfred R. Whitney, vice-president; Gustave H. Schwab, secretary; D. D. Williamson, treasurer; all of New York. Apply to the Rev. R. Heber Newton, D. D., or his assistant, 787 Madison avenue, New York.

NEW YORK CITY — (Continued).

Chapel Hill Fresh-air Mission of the Reed Alumnae League.

Incorporated May 23, 1893, under the general statute.—For the benevolent purpose of giving poor children opportunities of wholesome recreation in the country and for other benevolent purposes in New York city, and also in the county of Monmouth, State of New Jersey. Maintains a summer home for the poor children of the vicinity of Chapel Hill more especially. Controlled by a board of nine trustees.

Children's Aid Society (The), United Charities building, Fourth avenue and Twenty-second street. Summer home at Bath Beach, L. I., and Health Home at Coney Island. (See class III, division 3.)

Emanuel Sisterhood for Personal Service. No. 159 East Seventy-fourth street. (See class III, division 1.)

Gilbert A. Robertson Home. Incorporated under the general statute, April 1889. Institution opened July, 1891. Scarsdale, Westchester county. Founded under the will of the late Mrs. Rebecca E. Robertson, as a memorial of her deceased husband.—To establish near the city of New York a summer home to enable poor and indigent families to enjoy free of expense to them a short period of rest and recreation in the country during the summer months. Capacity forty to fifty, preference being given to families as entireties, including the men. One hundred and thirty-seven beneficiaries and 1,319 days outing given last year. Controlled by a board of trustees. Supported by endowed funds and voluntary contributions. Wm. Nelson Blakeman, Jr., president, New York city; S. Sidney Smith, secretary, 59 Wall street; E. Clarence Hovey, treasurer, Brookline, Mass.; Miss E. M. Brooks, matron. Apply to Miss S. A. Holly at the office, room 82, Bible House, Fourth avenue and Eighth street, week days, from 9 a. m., to 12 a. m.

House of the Good Shepherd of the Sisterhood of the Good Shepherd, at Asbury Park, N. J. (See class V, division 2.)

New York Association for Improving the Condition of the Poor. Fourth avenue and Twenty-second street. Branch,

NEW YORK CITY — (Continued).

- No. 58 East One Hundred and Twenty-fifth street. (See class III, division 1.)
- New York Bible and Fruit Mission to Our Public Hospitals.
Nos. 416 to 422 East Twenty-sixth street. (See class IV, division 4.)
- New York City Mission and Tract Society, Woman's Branch.
United Charities Building, Fourth avenue and Twenty-second street. (See class VII, division 8.)
- New York Infirmary for Women and Children. No. 5 Livingston place, Stuyvesant square. (See class VII, division 4.)
- New York Ladies' Home Missionary Society of the Methodist Episcopal Church (Five Points Mission). No. 63 Park street.
(See class III, division 3.)
- New York Protestant Episcopal City Mission Society. No. 38 Bleecker street. St. Barnabas's House fresh-air fund. (See class III, division 1.)
- New York Tenement House Chapter of the International Order of the King's Daughters and Sons. No. 77 Madison street.
(See class VII, division 8.)
- Nursery and Child's Hospital. Lexington avenue and Fifty-first street. (See class VII, division 4.)
- Order of Brothers of Nazareth. (See under Verbank, Dutchess county, class VII, division 2.)
- St. John's Guild. Office, No. 501 Fifth avenue. (See class VII, division 9.)
- St. John the Baptist Foundation. Mother House, No. 233 East Seventeenth street. (See class III, division 3.)
- St. Mary's Free Hospital for Children. No. 405 West Thirty-fourth street. (See class VII, division 4.)
- Sanitarium for Hebrew Children in the City of New York.
Office, No. 124 East Fourteenth street. (See class VII, division 8.)
- Trinity Church Association. No. 209 Fulton street. (See class III, division 1.)
- Tribune Fresh-Air Fund Aid Society. Incorporated December 12, 1888, under the general statute. Organized in 1877.—To

NEW YORK CITY — (Continued).

aid in providing ways and means to give children living in the city of New York, the benefit and enjoyment of fresh air in the country, within or without the State of New York. For poor children, with cleanly habits, under 12 years of age. During the summer of 1891, 13,568 children were sent to the country. Controlled by a board of managers, subject to the incorporators. Supported by voluntary contributions. Whitelaw Reid, Cornelius Vanderbilt, William E. Dodge, Morris K. Jessup, and Darius O. Mills, officers. Apply to the Rev. Willard Parsons, of "New York Tribune."

Working Girls' Vacation Society of New York City. Incorporated November 4, 1885, under general statute. Organized 1884. No. 222 West Thirty-eighth street.— To give vacations to such respectable working girls, as may need them for their health; for unmarried working women, recommended by some responsible person, and having a doctor's certificate, who are worn out, sick or convalescent; 864 beneficiaries last year. Controlled by a board of managers. Supported by voluntary contributions. Mrs. James F. Drummond, president, 436 West Twenty-second street; Mrs. S. D. Floyd, vice-president, 104 Madison avenue; Mrs. William Herbert, secretary, 434 West Twenty-second street; Miss Edith Bryce, treasurer, 40 West Fifty-fourth street. Apply at any time by letter, or in person, to the officers, or managers, or to the assistant, Miss E. A. Buchanan, 222 West Thirty-eighth street.

Young Women's Christian Association of the City of New York. No. 7 East Fifteenth street. (See class III, division 3.)

PORTAGEVILLE, P. O. — WYOMING COUNTY.— Wyoming Benevolent Institute. Incorporated by special act, chapter 479, Laws of 1870. Amendatory act, chapter 522, Laws of 1872.— To benefit indigent young persons, chiefly by maintaining a free public library (opened in 1871), and by providing summer vacations at Prospect Home Villa, near Glen Iris, for indigent children. Children are generally received upon

PORTAGEVILLE, P. O. — (Continued).

application of benevolent institutions. Average number of children benefited by vacations during the summer season, about forty. Controlled by a board of trustees. Supported by voluntary contributions. Ogden P. Letchworth, president; Samuel C. Adams, secretary; Henry R. Howland, treasurer, all of Buffalo; Mrs. M. A. Crozer, librarian, Portageville. Apply to any of the officers of the institute.

SCARSDALE — WESTCHESTER COUNTY.—Gilbert A. Robertson Home, which see under New York city, in this division.

SEA CLIFF — QUEENS COUNTY, L. I.—Summer Home of the Bureau of Works and Charities of All Soul's Church, New York city, which see in this division.

WEST BRIGHTON BEACH — KINGS COUNTY.—Seaside Home for Children of the Children's Aid Society of Brooklyn. (See class III, division 3.)

DIVISION 8.—BENEVOLENT AND BENEFICIAL SOCIETIES AND ASSOCIATIONS, INCLUDING RELIEF TO FOREIGNERS.

[Persons are reminded of the provisions made by the societies of Free Masons, Odd Fellows and similar secret organizations, for the worthy poor among their own fraternity, or formerly belonging thereto, and for the families of deceased members.]

[Many of the nationalities have a number of mutual benefit societies which give limited general relief to distressed fellow country people, who are not members. These are too transient for compilation, but may be learned by inquiry of leading societies when occasion requires.]

ALBANY — ALBANY COUNTY.—Albany Masonic Relief Association. Incorporated December 19, 1890. Peter Kinnear, president; John Fonda, secretary; Wheeler B. Melius, treasurer. (No response has been received, so this is copied from a city directory.)

ALBANY — (Continued).

St. Andrew's Society of the City of Albany. Incorporated by special act, March 27, 1821. Amendatory act passed March 1858.—To give relief and advice to worthy needy natives of Scotland, their families, or descendants, so that they may not become a public charge. Controlled by the board of trustees. Supported by membership dues, and by contributions. John McEwen, president; Donald McDonald, James McLaren and Andrew McMurray, relief committee, to whom apply.

St. George's Benevolent Society of Albany. Incorporated August 29, 1865, under the general statute. Amendatory act passed March 16, 1883. Organized in 1860.—To afford relief and advice to indigent natives of England, or to their wives, widows or children, and to promote social intercourse among its members, and to form a permanent fund to carry out the charitable purpose. Controlled by a board of trustees. Supported by membership dues and a permanent fund. Geo. H. Stevens, president, 252 Hamilton street; W. W. Grey, secretary, 97 Madison avenue; R. N. Newton, treasurer, 7 Elm street. Apply to the charitable committee of the society.

BROOKLYN — KINGS COUNTY.—Brooklyn Benevolent Society (Trustees and Associates of the). No. 84 Amity street. (See class V, division 2.)

Chinese Hospital Association. No. 45 Hicks street. (See class VII, division 1.)

Hebrew Benevolent Association of Brooklyn, Eastern and Western Districts. E. D. office, 93 South Ninth street; W. D. office, —————. (See class III, division 3.)

Ladies' Benevolent Association of Greenpoint. Seventeenth ward. (See class V, division 3.)

Norwegian Relief Society. Incorporated May 20, 1886, under the general statute. Organized in 1882. Office and "Deaconesses' Home," Forty-sixth street and Fourth avenue.—To afford gratuitous aid to poor or suffering Norwegians of all

BROOKLYN — (Continued).

ages in the United States, and to relieve them in their spiritual or bodily distress. Particularly for those living in New York and Brooklyn, who, upon investigation, are found needy and in distress, and who, when so able to do, will endeavor to repay for expenses incurred, during their stay in the Home or Hospital. Capacity for forty patients in the home. Average number of inmates, twenty. Relief was given to 1,553 persons in various forms, viz.: Hospital and outdoor treatment and nursing, medicines, meals, house rent, lodging and clothing in 1890. Controlled by a board of directors. Supported by voluntary contributions. Carl Ullenaes, president, 32 Hamilton avenue; Samuel Harris, vice-president, 220 Ninth street; Theo. Siqveland, secretary, 260 President street; Chr. Ram, treasurer, 41 Broad street, New York city. Apply to the Sister Superior at the home and hospital of the society, Forty-sixth street and Fourth avenue.

Scandinavian Sailors' Temperance Home. Incorporated October 1, 1889, under the general statute. Opened July, 1888. Nos. 32 and 34 Hamilton avenue.—For the promotion of the welfare and morals of the seamen of Norwegian, Swedish or Danish nationality, who may be found within the port of New York, and who may desire or need the aid of this corporation in the direction indicated. Worthy Scandinavian seamen in needy circumstances, or who are temporarily in distress by unforeseen circumstances, sickness, shipwreck, etc., are relieved and are given credit for board and clothing, and situations are found, free of charge. Capacity for, and average number of inmates in the home, ninety. Credit was given to about 500 seamen, to the amount of \$5,149, last year, \$2,891 of which was repaid within a short time. Controlled by a board of directors. Supported by board of four dollars and fifty cents per week, which is paid by those who are able. Subscriptions and donations are being solicited for a new building. Karl Woxen, Norwegian and Swedish Consul, president, New York city; Carsten Boe, vice-president, 12 Bridge street, New York city; August Reynert, secretary,

BROOKLYN — (Continued).

128 Broadway, New York city; John Anson, treasurer, 53 Hamilton avenue, Brooklyn; Captain C. Ullenaess, superintendent to whom apply, in person, at the home.

Society of St. Vincent de Paul, Particular Council of Brooklyn. No. 7 Poplar street. (See class III, division 1.)

Williamsburgh Benevolent Society. No 61 Meserole avenue. (See class III, division 1.)

HUDSON — COLUMBIA COUNTY.— Volunteer Firemen's Home Association of the State of New York (The). (See class V, division 3.)

NEW YORK CITY — Achnosath Orchim Association. Incorporated ————. Organized in 1889. No. 210 Madison street.— Gives material relief and moral aid to Jewish immigrants by furnishing temporary free lodgings and meals, and helps them to procure employment and transportation to their relatives. Maintains the Hebrew Sheltering Home (Achnosath Orchim). Over 4,000 were cared for last year. Controlled by a board of managers. Supported by members' dues and by donations. Kasryel H. Sarasohn, president, 185 East Broadway; L. Marcus, financial secretary; Sol. Eliasberg, treasurer, 141 East Broadway. Apply to the superintendent at the home, at any time.

Actors' Fund of America. Incorporated June 8, chapter 327, Laws of 1882. No. 12 West Twenty-eighth street.— To care for the destitute and sick, and to bury the dead of the theatrical profession. Controlled by a board of trustees. Supported by theatrical benefits, donations and an appropriation from theatrical license moneys, made by the board of estimate and apportionment. A. M. Palmer, president, Palmer's theater; Charles W. Thomas, secretary, Madison Square theater; Frank W. Sanger, treasurer, Broadway theater; Lester S. Gurney, assistant secretary, 12 West Twenty-eighth street, to whom apply.

American Seamen's Friend Society. Incorporated by special act, chapter 195, Laws of 1833; amendatory acts, chapter 58,

NEW YORK CITY — (Continued).

Laws of 1864, and chapter 158, Laws of 1885. Office, No. 76 Wall street.—To improve the social and moral condition of seamen by uniting the efforts of the wise and good in their behalf; by promoting, in every port, boarding-houses of good character, savings banks, register offices, libraries, museums, reading-rooms and schools; and also the ministration of the gospel and other religious blessings. Has missionaries and homes for seamen at thirty-two seaports in the United States and foreign countries. Furnishes loan libraries for sea-going vessels; clothes and cares for shipwrecked American seamen, and aids sick and destitute sailors in returning to their homes. Maintains a sailors' home (established in 1842), at 190 Cherry street; a sailors' boarding-house, where provision is also made for destitute shipwrecked seamen. Controlled by a board of trustees. Supported by voluntary contributions. Charles H. Trask, president; Rev. Dr. W. C. Stitt, secretary; Wm. C. Sturges, treasurer; L. P. Hubbard, assistant treasurer and financial agent, all of 76 Wall street, to which office apply, in person or by letter, during business hours.

Artists' Fund Society of the City of New York. Incorporated by special act, April thirteenth. Chapter 188, Laws of 1861. Organized February, 1859. Office of secretary, 144 West Eighteenth street.—To accumulate a fund for the aid of its members in disablement, sickness and distress, and to aid and assist widows, children and families of its deceased members; also for the relief of artists and their families, whether members of the society, or not, who are found worthy of assistance. An executive committee and board of control have charge of the affairs of the society. Supported by dues and contributions of members, and by donations. George H. Story, president, 230 West Fifty-ninth street; Seymour J. Guy, vice-president, 51 West Tenth street; George H. Yewell, secretary, 114 West Eighteenth street; Lockwood De Forest, treasurer, 7 East Tenth street. Apply by letter to the president or secretary at any time.

NEW YORK CITY — (Continued).

Austrian-Hungarian Hebrew Free Burial Association. Incorporated April 26, 1889, under the general statute. Meets at No. 113 Second street.—To bury members of very poor Hebrew families, unable to make provision therefor. There were 340 poor Hebrews buried by this association last year. Controlled by a board of trustees. Supported by voluntary contributions. Joseph Grusner, president, 113 Second street; E. Newman, vice-president; L. Weizenhoffer, financial secretary; I. M. Horn, recording secretary; A. Newman, treasurer. Apply to the president at his home at any time, or to any of the trustees.

Baron DeHirsch Fund (Central Committee of the). Organized 1889. Executive office, No. 45 Broadway, room 89.—For the benefit of Russian Roumanian immigrants who have been, except for educational purposes, in this country not longer than two years. To Americanize and assimilate the immigrants with the masses, by teaching them to become good citizens, and to prevent, by all proper means, their congregating in large cities. It furnishes mechanics with tools; teaches easily acquired trades, or the knowledge of the use of tools; pays entrance fees into trades-unions; loans small sums, in exceptional cases, to help to self-support, but gives no alms or charitable relief. Gives transportation to points where it is positively known there is a market for the particular kind of laborers sent forward. It establishes day and night schools for both children and adults, only when the local authorities or organizations have failed to make such provision, wherein shall be taught the elementary branches of English, and which shall include the Constitution of the United States and improved sanitary habits. Myer S. Isaacs, president; Jesse Seligman, treasurer; A. S. Solomons, general agent, to whom apply at the executive office.

Belgian Society of Benevolent (Societe Belge de Beinfaisance). Incorporated September 28, 1871, under the general statute. Organized October 20, 1869. One hundred and five East Twenty-second street.—To aid, support and

NEW YORK CITY — (Continued).

assist indigent, needy and distressed Belgians and their wives and children, besides the widows and families of deceased Belgians, who may be in want, within the State of New York, and to give advice and assistance to new comers, and to encourage them to action in fields of science, industry and commerce. Over 300 families assisted last year. Controlled by a board of trustees. Supported by voluntary contributions. Charles Mali, president, 329 Broadway; F. Jonghmans, secretary, 329 Broadway; A. De Braekeler, treasurer, 31 Barclay street. Apply to the committee every Tuesday or Friday, from 4 to 5 p. m., at 21 University place.

Blue Anchor Society, or New York State Auxiliary to the Women's National Relief Association. Office, No. 30 East Fourteenth street. (See class IV, division 3.)

Free Burial Fund Society of the Congregation Darech Amuno. Incorporated April 27, 1876, under the general statute. Is a constituent of the United Hebrew Charities, at No. 128 Second avenue.—Provides the ground for the burial of Hebrews dying in destitution, the United Hebrew Charities paying the other necessary expenses. Supported by voluntary contributions. Marcus E. Harris, president, 110 West Thirteenth street, to whom apply, or at the office of the United Hebrew Charities, 128 Second avenue.

French Benevolent Society of the City of New York (Societe Francaise de Bienfaisance de New York). Incorporated by special act, April 13, 1819. Amended March 13, 1868. Organized in 1809. Nos. 320 and 322 West Twenty-fourth street.—Assists the needy French and their descendants and persons speaking the French language only, by furnishing medical advice and medicines, food, clothing, money and temporary shelter, by means of the following departments, viz.: First. Relief Bureau; gives general relief to the needy French. Bureau of Immigration; directs French immigrants on arrival and returns to France those remaining a charge on the society. Night Refuge; gives temporary shelter and food to

NEW YORK CITY — (Continued).

destitute poor French. Dispensary; open daily, except Sundays, from 2 to 3 p. m.; gives free advice to sick French persons and their families, but medicines are given to the indigent only. Free Medical Attendance; to indigent sick French in their homes, who are unable to be received in the hospital. Hospital; for poor sick French; indigent patients are received *free*, but those able to pay are charged according to their circumstances. Capacity for seventy-five beds. Application should be made daily, except Sundays and holidays, from 2 to 3 p. m., but accident cases are received at any hour. No contagious diseases are admitted. Home; where the aged, infirm and indigent French or descendents of both sexes are given a temporary home, until placed in the care of the "Home for the Aged of the Little Sisters of the Poor." Controlled by board of administration. Supported by voluntary contributions, patients' fees and a small appropriation, made by the French government. Over 5,732 persons assisted last year. Joseph Thoron, president, 112 West Thirty-eighth street; Casimir Thoron, secretary, 23 South William street; Charles Condert, treasurer, 68 William street. Apply at any time to the Sister Superior in charge or to the house physician from 2 to 3 p. m. at the home and hospital, No. 320 West Thirty-fourth street.

French Benevolent Society of the Ladies of St. Vincent de Paul (*Societe Francaise de Bienfaisance des Dames de St. Vincent de Paul*). No. 127 West Twenty-third street.—For the care of French widows, old and infirm women, and the support of the orphans in the "Asylum of St. Vincent de Paul." (See class V, division 2). Under the care of the *Soeurs Marianites* de St. Croix. No assistance is given by the society to men. Applications for admission to the orphanage are received the first Wednesday of each month, from October to June inclusive, at No. 215 West Thirty-ninth street. Money, clothing and work are distributed by the ladies the first Thursday of each month from 2 to 5 p. m., in the basement of the church of St. Vincent de Paul, No. 127 West Twenty-third street, and

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the needy sick and poor are also visited in their homes. Supported by voluntary contributions. Mme. E. La Montagne, president, 40 West Twenty-eighth street; Mlle. A. G. de Blossieres, secretary; Mme. E. Fort, treasurer.

German Masonic Temple Association of the City of New York. (See "German Masonic Home," under New York Homes, class V, division 3.)

German Mission House Association of the Port of New York. Incorporated April 12, 1867, under the general statute. Organized in 1849. No. 27 State street.—For benevolent and religious purposes and to afford to German emigrants, sailors and others speaking the German language, shelter, protection, board, religious instruction, care and advice, as well as facilities for obtaining employment, general information and news. Controlled by a board of fifteen trustees elected by the East German Conference of the Methodist Episcopal Church. Supported by the interest of an invested fund. C. W. Romer, president, Newark, N. J.; Rev. P. Quattlander, secretary, 256 Second street; F. K. Keller, treasurer, 664 Sixth avenue; Rev. George H. Simons, missionary, of 1069 Bushwick avenue, Brooklyn, to whom apply for relief or advice, at No. 27 State street.

German Odd Fellows' Home Association of New York. No. 87 Second avenue. Maintains a home at Unionport, Van Nest Station, Westchester county. (See under New York homes, class V, division 3.)

German Society of the City of New York (*Deutsche Gesellschaft*). Incorporated by special act April 6, 1804. Amended April 14, 1825. Organized in 1784. No. 13 Broadway (P. O. box No. 1429).—Assists all needy Germans by furnishing medical advice and medicines, money and general relief; also cares for the German immigrants on their arrival and finds employment for them by means of the labor bureau. Last year over 120 families were assisted in various ways, 1,107 meals given to immigrants and 5,865 situations were obtained. Controlled by a board of directors. Supported

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by annual dues of members, donations and interest of invested funds. Gustav H. Schwab, president, 2 Bowling Green; Ernest Steiger, secretary, 25 Park place; W. A. Schmitthenner, treasurer, 13 Broadway; Benj. Schiemann, acting manager, 13 Broadway, to whom apply from 9 a. m. to 5 p. m.

Hebrew Benevolent Fuel Association. No. 128 Second avenue. (See class III, division 1.)

Hebrew Relief Society. No. 128 Second avenue. (See class III, division 1.)

Home Hotel Association. St. Ann's avenue and One Hundred and Thirty-fifth street. (See class IV, division 3.)

Hungarian Association of the City of New York. Incorporated June 18, 1887. Office No. 12 Avenue B.—To aid Hungarian immigrants who have not yet resided five years in the United States; to maintain suitable localities, in which agents of the association are to give advice and information gratuitously to immigrants; material aid to the needy; work to the unemployed, and transact all passage and general banking business, in the interest of the Hungarian immigrants. All applications are investigated by the charity committee and, if sick, the physicians of the association give free medical treatment and pass upon their merits. Investigated over 800 cases and cared for 705 beneficiaries last year. Controlled by a board of directors. Supported by dues of members and by voluntary contributions. De A. G. Gerster, president, 56 East Twenty-fifth street; K. Bardos, first vice-president, 402 1-2 Grand street; I. J. Grant, second vice-president, 39 Norfolk street; Emil Stern, financial secretary, 28 Elm street; I. H. Rosenfeld, treasurer, 282 East Houston street. Apply to the charity committee every Monday and Friday at the office, No. 12 Avenue B.

Independent Order Benai Berith, District Grand Lodge No. 1. Third avenue, corner Fifty-seventh street. (See class V, division 3.)

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Irish Emigrant Society. Incorporated by special act, April 29th, chapter 226, Laws of 1844. Organized in 1841. Office No. 51 Chambers street. To afford advice, information, aid and protection to immigrants from Ireland, and generally to promote their welfare. Its representatives meet the immigrants on Ellis island, and it maintains a labor bureau, which procured situations free of charge, to employer or employee, for nearly 7,000 persons in 1890; also assisted and relieved 550 who had been less than one year in the United States. Controlled by a board of officers. Supported by interest on investments and members' dues. James Rorke, president; Denis Daly, secretary; Joseph A. Kernan, treasurer, to whom apply at 51 Chambers street, from 9 a. m. to 4 p. m.

Italian Benevolent Society of New York (*Societa Italiana di Beneficenza Emigrazione e Colonizzazione*). Incorporated September 18, 1882, under the general statute. Organized in 1857. No. 20 Varick place.—For the relief of worthy sick and needy Italians, especially aged men and women, widows and such as are unable to work; to improve their moral and physical condition, to assist immigrants and to form colonies in different parts of the country. Last year 31,227 meals were given, in addition to other forms of assistance. Controlled by a board of managers and a special committee. Supported by voluntary contributions, donations and members' fees. Peter Arata, president, 407 Canal street; B. Morossi, secretary, 229 East Sixth street; D. Cella, treasurer, 30 South Fifth avenue. Apply to the president or secretary at 20 Varick street.

Italian Home (*Istituto Italiano*). Incorporated July 11, 1889, under the general statute. The New Home, Hospital and Dispensary was opened February, 1891. No. 179 Second avenue. Branch office 9 Old Slip.—A benevolent protective association which affords advice, aid, education, reformation and protection to the Italians in this country, and in any lawful manner benefits them, and furthers their welfare.

NEW YORK CITY — (Continued).

The work of the Home is divided into four branches, viz.: Hospital and Dispensary for the care and treatment of sick Italians, and in emergency cases receives those of any nationality, regardless of creed or color. The Relief Bureau cares for the wants of the worthy indigent, by providing money, food, clothing, and assists them to procure employment. The immigration branch cares for the interest of the Italian immigrants after their arrival here, to impart needed information, and prevent them from being defrauded, and the educational branch aids Italians, both adults and children, by means of the evening schools to acquire the English language and instructs them in elementary branches and the laws of citizenship. The Home contains 100 beds for infirm adults, the sick and disabled; convalescents also receive temporary care, but incurable, chronic and contagious diseases are not admitted. Average number of inmates, twenty-four. Free meals may be procured from the kitchen, but no lodgings are supplied. Two hundred and sixty-seven patients were cared for in the hospital; 3,024 dispensary cases and 3,507 received advice and assistance last year. Controlled by a board of trustees. Supported mainly by voluntary contributions. Giovanni Starace, president, Sackett street, Brooklyn; E. J. Attinelli, physician-in-chief. Apply in person or by letter any day to any of the officers, the matron or the medical staff at 129 Second avenue.

Jewish Immigrants' Protective Society of New York. Incorporated in 1885 under the general statute. No. 124 Second avenue.—For the relief and protection of Jewish immigrants. Controlled by a board of directors. Supported by members' dues and by voluntary contributions. Meets once a month at the various residences of the directors. Ferdinand Levy, president, 27 Chambers street; S. Hailbloom, secretary; A. J. Bloomberg, treasurer. (Copied from the "New York Charities' Directory," as no reply has been received.)

NEW YORK CITY — (Continued).

Leo House, for German Catholic Immigrants. Incorporated February 18, 1889, under the general statute. No. 6 State street.—For the establishment and maintenance in New York city for the reception, protection or assistance of German Catholic immigrants, and others speaking the German language, just landed, and generally for the promotion of their spiritual and temporal welfare. Those who are able must pay according to their ability, but the needy are provided for free of charge. Capacity for seventy. Daily average, twenty-five inmates. Last year lodgings were given to 1,265 immigrants and 3,746 free meals to needy persons. Controlled by a board of directors. Supported by immigrants' pay, donations and contributions from the St. Raphael's Society. Archbishop Corrigan, honorary president; Bishop W. M. Wiggins, D. D., president; W. Schickel, vice-president, 52 East Eighty-third street; J. Schaefer, secretary and treasurer, 35 East Twentieth street. Apply at the society's office, No 6 State street, or to any of its officers or agents at the emigrants' landing place.

Life Saving Benevolent Association of New York. No. 51 Wall street. (See class IV, division 3.)

Lutheran Emigrants' House Association of New York. Incorporated by special act April 12, 1871. The Emigrants' House was opened in 1873. No. 26 State street.—To assist, protect and advise German and Scandinavian emigrants, after landing in New York, particularly those lately arrived, who are worthy and needy, and without work or means of subsistence. Capacity of home, twenty-five. Controlled by a board of trustees. Supported by voluntary contributions and interest from invested funds. E. C. Körner, president, 907 Park avenue; Wm. Hauff, secretary, 41 Park row; Wm. A. Schmitthenner, treasurer, 13 Broadway. Apply at any time to the missionary in charge at the house, 26 State street.

Lutheran Pilgrim Home (Lutherisches Pilger Haus) of the Emigrant Mission Committee of the German Evangelical Lutheran Synod of Missouri, Ohio, and other States, at the City of New

NEW YORK CITY — (Continued).

York. Incorporated in 1889. No. 8 State street.—To protect German Luthern emigrants, and to render them counsel, assistance and general aid; gives cheap lodgings to those able to pay and free lodgings to the destitute. Applicants must be respectable. Capacity for 150 inmates. Controlled by a board of trustees. Supported by voluntary contributions from Lutheran congregations. Apply to the missionaries at the home at any time. (Copied from the "New York Charities' Directory," as no reply has been received.)

McAuley Water Street Mission. No. 316 Water street, near Franklin square. (See class III, division 1.)

Mission of Our Lady of the Rosary of the City of New York. Incorporated October 5, 1887, under the general statute. Institution opened 1884. No. 7 State street.—To afford shelter and protection, irrespective of creed, to needy and worthy female immigrants, who, when landing on Ellis island are met and assisted at the home. Four thousand and twelve lodged and fed during 1891. Controlled by the director. Supported by charitable contributions. Rev. Michael Callaghan, director; Rev. M. Cahill, assistant director, 7 State street; P. McCove, clerk, 112 East One Hundred and Sixth street. Apply to the mission at any time.

New York Press Club. Incorporated in 1874, under the general statute. No. 120 Nassau street.—Furnishes free burial to deceased journalists when applied for.

Norwegian Relief Society. Office, Deaconesses' Home and Hospital are located at Forty-sixth street and Fourth avenue, Brooklyn.—Receives and assists needy and sick Norwegians in New York and vicinity. (See under Brooklyn societies in this division.)

Passover Relief Association. (See class III, division 1.)

Polish Benevolent Society. No. 161 East Twenty-fifth street.

St. Andrew's Society of the State of New York. Organized in 1756, and incorporated by special act, 1826. No. 287 East Broadway.—For the relief of worthy, distressed natives of Scotland, and their descendants. Assisted over 2,000 per-

NEW YORK CITY — (Continued).

sons last year. Controlled by a board of managers. Supported by members' subscriptions and interest on permanent fund. John Sloane, president; George H. Watson, secretary; Alex. Laird, treasurer; George Calder, almoner and general agent, to whom apply from 8.30 to 11.30 a. m. (Copied from the "New York Charities' Directory," as no reply has been received.)

St. David's Society of the State of New York. Incorporated by special act May 9, 1846, as "The St. David's Benevolent Society." Name changed by order of Supreme Court, to above title, May 29, 1889. Rooms of meeting, No. 21 University place.—To afford pecuniary relief to all distressed Welshmen and Welshwomen, to such as have recently immigrated to this country, as well as those who have resided here for a longer period of time; and in addition to such relief, the society may offer to the distressed, such other aid as may be needed; also for social intercourse. Controlled by a board of officers. Supported by members' dues, donations and interest on invested funds. Rev. D. Parker Morgan, D. D., president; Josiah D. Evans, secretary, 62 West Nineteenth street; John Thomas, treasurer, 169 Jay street, Brooklyn; John Lewis, chairman of benevolent committee, 71 East Eighth street, to whom make application for relief.

St. George's Society of New York. Organized in 1786, and incorporated by special act in 1838. No. 7 Battery place.—Assists needy English residents of New York or vicinity, by alms, advice or help to secure work. Special attention is given to destitute and helpless women and children. No tramps or recent immigrants are relieved. F. W. J. Hurst, president; Berkeley Mostyn, secretary; Thomas B. Bowring, treasurer. Apply to Almoner C. N. Crozier, at No. 7 Battery place, from 9 a. m. to 4.30 p. m. (Copied from the "New York Charities' Directory," as no reply has been received.)

St. Raphael's Society of the Leo House for German Catholic Immigrants. Incorporated. (St. Rafael Verein zum Schutze

NEW YORK CITY — (Continued).

Deutscher ein und Auswanderer). No. 6 State street.—To aid and protect the German Catholic immigrants, and to assist in maintaining the house for the same. Supported by voluntary contributions and by members' dues. Rev. Reuland, secretary, No. 6 State street, to whom apply.

Society for the Relief of Widows and Orphans of Medical Men. (See class IV, division 3.)

Spanish-American Benevolent Society of New York (Sociedad De Beneficencia Hispano-Americano De Nueva York). Incorporated March 17, 1892, under the general statute. Office opened in May, 1892, at No. 349 West Forty-sixth street.—For the relieving of the needy poor and the providing of medical attendance and of medicines to the destitute sick of the Spanish-American Republics and Cuba and Porto Rico, who reside in this city; also to build and maintain a dispensary and a sanitarium. Applicants for relief, must be Spanish-Americans, Cubans and Porto Ricans, deserving and be recommended by one member, at least, of the society, and by the committee of information, which investigates the cases. During the first six months, the society expended over \$300. Controlled by a board of officers and a committee of information. Supported by voluntary contributions. Ramon L. Miranda, president, 349 West Forty-sixth street; Dr. Buena-ventura Portmondo, vice-president, 419 East One Hundred and Fifteenth street; Gonzalo de Quesada, secretary, 349 West Forty-sixth street; Manuel F. Barranco, treasurer, 281 Pearl street; Antonia C. Gonzalez, of 35 Broadway, and M. A. Tirado, of 36 Vesey street, trustees; Vincente Diaz Comas, president of committee of information, No. 301 East One Hundred and Fourth street. Apply to the president, at 349 West Forty-sixth street.

Spanish Benevolent Society of New York (Sociedad Espanola de Beneficencia). Incorporated ——. No. 140 Maiden lane.—Assists all needy persons, chiefly Spaniards, found worthy and who come recommended by the committee on benevolence. Controlled by a board of managers. Supported by voluntary

NEW YORK CITY — (Continued).

contributions. Over 150 applicants aided last year. Cesareo Vigil, president; M. Campo, secretary, 140 Maiden lane; Javier Eguiguren, treasurer, 120 Maiden lane. Apply to any of the officers. (Copied from the "New York Charities' Directory," as no reply has been received.)

Swiss Benevolent Society of New York (*Societe Suisse de Bienfaisance de New York*). Incorporated by special act, April 14, 1851. Organized in 1832. The home was opened in October, 1883, at No. 108 Second avenue.—To afford pecuniary and other relief to such persons, natives of Switzerland, or of Swiss origin, as may be in the United States and in need of assistance. Maintains the Swiss Home, a temporary home with medical attendance, for Swiss of both sexes who are without means. Needy immigrants, or Swiss residents of this city applying for admission, must be worthy, and furnish evidence that they are unable to be self-supporting. Capacity for thirty-four. Average number of inmates, twenty-five. About 1,600 persons assisted outside of the home last year. Controlled by a standing committee. Supported by voluntary contributions, donations by the Swiss confederation, and interest from invested funds. T. Bertschman, consul, honorary president; Henry Esches, president; Perd Chappens, C. U. Engler, secretaries; Charles Glatz, treasurer; Henry Englehardt, resident manager, to whom apply in writing, at any time, or in person, Mondays, Wednesdays and Fridays, from 4 to 6 p. m.

Syrian Society of the City of New York (*The*). Incorporated January 27, 1893, under the general statute.—To provide an industrial and educational institution in New York city, or elsewhere, for the Syrian immigrants and for all those speaking the Arabic tongue; to teach them the English language and instruct them in all the requisites for self-support and American citizenship and to extend to them sympathy and aid, as needed. Said society shall be unsectarian, and conducted on Christian Evangelical principles. Controlled by nine trustees.

NEW YORK CITY — (Continued).

United Hebrew Charities of the City of New York. No. 128
Second avenue. (See class III, division 1.)

Young Women's Society of the French Evangelical Church, in
the City of New York. No. 341 West Thirtieth street. (See
class III, division 6.)

Zion Aged Relief Association of the City of New York. Incorporated in 1878, under the general statute. Office No. 211 West Tenth street. No information has been received whatever, concerning its work.

YONKERS — WESTCHESTER COUNTY. — Hebrew Benevolent Society of Yonkers, New York. Incorporated July 24, 1893.— For the promotion of benevolence, charity and good-will among the resident Jews of Yonkers, and the assisting of such of them as are in need by voluntary contributions among its members. Controlled by a board of eight trustees, viz.: Samuel Schoen, Wm. Beyer, Behr Weinberg, Joseph Klein, Bernard Freidman, A. Lindner.

C L A S S I V .

SPECIAL RELIEF — (Of Special Kinds and for Special
Classes).

[Visitors are reminded of the provision made by the societies of Free Masons, Odd Fellows and similar secret organizations, for the worthy poor among their own fraternity, or formerly belonging thereto, and for the families of deceased members.]

[The Charity Organization Societies (see page 1-14) seek to obtain from the proper sources, suitable and adequate relief of the kinds named in the following divisions, or to direct thereto.]

DIVISION I.—LEGAL AID AND ADVICE, PENSIONS,
CLAIMS, SANITARY, LOANS, ETC.

BUFFALO — ERIE COUNTY.— Women's Educational and Industrial Union of Buffalo. No. 25 Niagara square. (See class III, division 2.)

NEW YORK CITY.—Demilt Dispensary. No. 401 Second avenue, corner of Twenty-third street. Public baths. (See class VII, division 6.)

German Legal Aid Society (Deutscher Rechts-Schutz Verein). Incorporated 1876, under the general statute. Office at 35 Nassau street.—To render legal aid and assistance gratuitously, if necessary, to all of any nationality who present a meritorious cause of action and defense, who may appear worthy thereof, and who, from poverty, are unable to procure it. Five thousand four hundred and twelve beneficiaries from January, 1891, to January, 1892. Controlled by board of directors. Supported by voluntary subscriptions, fees and commissions or collections. A. V. Briesen, president, 229 Broadway; G. A. Litthauer, secretary, 229 Broadway; Robert Behr, treasurer, 75 Beekman street; H. C. Kudlich, attorney, 35 Nassau street. Apply at room 4, No. 35 Nassau street, in person, from 9 a. m. to 5 p. m.

Hebrew Sanitary Reform Society. Incorporated ———.—For the general supervision of the sanitary condition of tenement-houses occupied by Hebrews, compelling landlords to obey the laws in that respect. In extreme cases of sickness or destitution, it removes families at its own expense from unwholesome apartments to better ones, and furnishes medical advice and medicines. J. A. Engelhardt, president; Dr. S. N. Leo, secretary, 103 West Fifty-fifth street; Joseph Bach, treasurer, 30 Warren street, to either of whom apply.—(Copied from the "New York Charities' Directory," as no reply has been received.)

Loan Relief Association. Incorporated November 6, 1878, under the general statute. Meets for work in the chapel of Chalmers' Church, Seventh avenue, near Eighteenth street.—To visit the poor, care for the sick in their homes, and to thoroughly investigate their cases; to supply medical attendance and medicine gratuitously, when recipients are utterly unable to procure either, and at low price to those unable to pay but a small sum for the same; to loan articles without charge, necessary for the comfort and recovery of the sick; to loan

NEW YORK CITY — (Continued).

money without interest upon good security, to carry the worthy destitute over hard places; to render such legal aid and protection and to give counsel and advice, through the counsel of the association, to the poor and destitute, as may from time to time seem necessary and desirable, to the officers of the association. The work of the association is varied in its charitable efforts, and cares for the sick and needy of the sixteenth ward of New York city. Controlled by a board of officers and trustees. Supported by members' fees, subscriptions and donations in money, clothing and delicacies, etc., for the sick. Miss M. H. Avery, president, 4 East Thirty-eighth street; Mrs. S. W. Evstaphieve, secretary, 19 East Forty-sixth street; Mrs. H. C. Phillips, treasurer, 72 West Twelfth street; Mrs. Richard Laimbeer, assistant secretary and treasurer, 19 Madison square; Mrs. F. Husbands, missionary nurse and visitor, 334 West Twenty-second street, to whom apply at the chapel, Seventh avenue and Eighteenth street.

New York Association for Improving the Condition of the Poor. United Charities building, Fourth avenue and Twenty-second street.—Receives complaints for violation of sanitary laws, and maintains public baths. (See class III, division 1.)

New York Bible and Fruit Mission to our Public Hospitals. Nos. 416 to 422 East Twenty-sixth street. Has a loan relief fund. (See class IV, division 4.)

New York Society for Prevention of Cruelty to Children. Fourth avenue and Twenty-third street. (See class IV, division 3.)

Sanitary Aid Society of the City of New York. Incorporated in 1885 by special act. Opened the first lodging-house in 1885 at No. 9 Doyer street, which was closed when the large new one at 94 Division street was opened in 1889.—To provide cheap shelter for those whom the law drives out of the overcrowded tenements; to remedy and prevent overcrowding, and to cut down the mortality rate. It investigates evasions and violations of existing sanitary laws, prosecutes

NEW YORK CITY — (Continued).

offending parties, and endeavors to educate public opinion on this subject. The society maintains the model lodging-house and dormitories now at No. 94 Division street, where a bed and a bath, for twelve and one-half cents a night, or eighty-five cents weekly, with access to reading-room and library, are supplied to poor, homeless, orderly, cleanly sober single men, who are working, or seeking work, and who are willing to be helped to better things. Capacity, 140 beds; breakfast and supper are also provided at cheap rates; coffee and rolls, three cents each. Average nightly attendance, 120. Last year over 47,940 lodgings were provided. Similar lodging-houses are contemplated in other localities. The society is controlled by a board of directors. Supported by members' fees, lodging-house receipts and voluntary contributions. Kiliaen Van Rensselaer, president, 56 Wall street; E. R. A. Seligman and Hyman Blum, vice-presidents; Henry Mayell, financial secretary; Lee Kohns, honorary secretary; Wm. H. Ross, M. D., sanitary secretary, 37 West One Hundred and Twenty-fourth street; General Alex. S. Webb, treasurer, Twenty-third street and Lexington avenue. Apply to the superintendent of the dormitory, at 94 Division street. Sisters of the Stranger. No. 4 Winthrop place, Mercer street. (See class III, division 1.)

Tenement House Building Committee. Organized and incorporated in 1885. The model houses were first opened December, 1887, at Nos. 338 to 344 Cherry street, near Montgomery street.—For the erection of model houses for the poor in place of the old unsanitary tenements; and that the management of the model houses shall be on such a basis as to yield a fair return for the capital invested. Maintains in No. 340 Cherry street a free Kindergarten to aid in providing for the little children of this neighborhood, the environment necessary for their healthful growth and development. The children are given a lunch of bread and milk daily, towards the expense of which the parents are asked to contribute one cent for each day; when the penny is not forthcoming.

NEW YORK CITY — (Continued).

this leads to investigation and to the relief of cases of absolute destitution. The company is controlled by a board of trustees. The rents from the model houses yield a fair return to the stockholders. Oswald Ottendorfer, president; Abram C. Bernheim, recording secretary, 8 West Third street; E. R. A. Seligman, corresponding secretary, Columbia College; Jacob Scholle, treasurer, 33 Broad street. Apply to the superintendent of the model houses in Cherry street.

United Hebrew Charities of the City of New York. No. 128 Second avenue. Makes loans. (See class III, division 1.)

Working Women's Protective Union. Incorporated by special act, Laws of 1868. Organized in 1863. No. 19 Clinton place (Eighth street).—To promote the interests of women who obtain a livelihood by employments, other than as house servants, by securing for them, free of expense, legal protection from frauds and imposition by unscrupulous employers. It also maintains a registry where teachers, seamstresses, dressmakers, operators in every branch of female labor, except household service, are assisted in procuring employment. Claims for \$3,384 collected, and 10,508 applications for advice and employment made last year. Controlled by a board of officers and directors. Supported by voluntary contributions. W. H. H. Moore, president, 22 East Thirty-third street; J. O. Woods, vice-president, 15 East Eleventh street; J. H. Parsons, secretary and attorney, Montclair, N. J.; M. S. Beach, treasurer, Peekskill, N. Y. Apply personally to the superintendent any week day, between 9 a. m. and 4 p. m., at the above address.

DIVISION 2.—SICK AND DISABLED SOLDIERS AND SAILORS, THEIR WIDOWS AND ORPHANS.

BATH — STEUBEN COUNTY.—New York State Soldiers and Sailors' Home. (See class II, division 1.)

BROOKLYN — KINGS COUNTY.—Bureau of Employment and Relief Memorial and Executive Committee of Grand Army

BROOKLYN — (Continued).

of the Republic. Room 14, City hall. Organized in 1883.— For the relief of needy veterans of the late war, their widows and orphans. James D. Bell, president; S. Conrady, treasurer.

Life Line Mission. (See class IV, division 3.)

United States Naval Hospital. Flushing avenue. (See class II, division 3.)

NEW YORK CITY.—Blue Anchor Society, or New York State Auxiliary to the Women's National Relief Association. Office, No. 30 East Fourteenth street. (See class IV, division 3.)

Grand Army of the Republic (1867). Headquarters in New York city, Room 4, basement of City hall.—Gives general relief to needy members, their widows and orphans, and aids in securing pensions and admissions to the National Homes for Disabled Soldiers. In extreme cases of destitution, helps ex-soldiers who are not members. Furnishes free burial. Apply through the headquarters, to the commander of the post meeting nearest to the place where the applicant resides. By a law of the State, thirty-five dollars will be paid toward the burial of any soldier who served during the late war and who dies in poverty. Information about the several posts, etc., may be had of the memorial committee, E. J. Atkinson, secretary, 4 City hall.

Ladies' Union Relief Association. Incorporated January 12, 1867, under the general statute.—Organized for the relief of men disabled, during the war of the Union, and for the mothers and widows of such as were killed during the war, who upon investigation were found needy and worthy. Each year the need of this organization is growing less, and consequently the work will probably cease within a short period. Thirty families were assisted, and \$1,240 expended last year. Controlled by a board of managers. Supported by voluntary contributions, and a monthly allowance of ten dollars each for seven disabled men, from the outdoor relief fund of the national asylums. Mrs. John A. Kennedy, president, 135 West Twenty-second street; Mrs. M. S. Rogers, recording secretary, 46 West Fifty-first street; Miss E. S. Hamilton,

NEW YORK CITY — (Continued).

corresponding secretary, 122 East Twenty-ninth street; Mrs. W. F. Havermeyer, treasurer, 335 West Fourteenth street. Apply to any of the officers.

National Homes for Disabled Soldiers. Office of board of managers, No. 39 Park row. (See class II, division 3.)

United States Marine Hospital Service. Hospital at Stapleton, Richmond county. Office, at the Battery. (See class II, division 3.)

United States Pensions Agency in New York City. No. 398 Canal street. (See class II, division 3.)

DIVISION 3.—VARIOUS CLASSES, CALLINGS AND PROFESSIONS, AND HUMANE SOCIETIES.

BINGHAMTON — BROOME COUNTY.—Society for the Prevention of Cruelty to Animals. No. 1 Perry Block. An auxiliary to the parent society, which see under New York Charities.

BROOKLYN — KINGS COUNTY.—Brooklyn Office of the American Society for the Prevention of Cruelty to Animals. 415 Fulton street. Controlled by headquarters of the society, which see under New York city.

Life Line Mission (The). Incorporated March 9, 1892, under the general statute.—The county in which the business of said society is to be conducted, and in which its place of business or principal office shall be located, is the county of Kings, N. Y., but the society may establish, maintain and conduct in other counties of this State, branches, or stations, or missions, for any of the objects and purposes herein specified. The particular business and objects of such society are the proclamation of the gospel, the holding of evangelical services the establishment and maintenance of libraries, reading-rooms, dispensaries, lodging-houses, boarding-houses and coffee-rooms, and the doing of other missionary and benevolent work incidental or subsidiary to or connected with any of

BROOKLYN — (Continued).

the purposes or objects above specified, with the view especially of promoting the welfare of sailors and those engaged in or connected with commerce and navigation, as well as of other persons. Controlled by ten trustees.

Brooklyn Society for the Prevention of Cruelty to Children. Incorporated by special act December 11, 1880, under chapter 130, Laws of 1875. Amendatory act, chapter 30, Laws of 1886. No. 105 Schermerhorn street. Special temporary shelter opened May, 1892, to accommodate about twenty-five.— To prevent and punish wrongs to children, especially those under 16 years of age. Investigated 1,190 complaints, made 244 prosecutions, 3,226 children were affected, and 400 were rescued last year. Controlled by a board of directors. Supported by voluntary donations and dues of members. Henry R. Jones, president, 464 Clinton avenue; Robert J. Wilkin, superintendent, 148 Henry street. Apply at the office of the society or to any of its agents in Kings, Queens and Suffolk counties, or to the police.

Christian Rescue Temperance Union. Fifth avenue and Eighth street. (See class III, division 1.)

Long Island Life Saving Association. No. 45 Broadway.

United States Naval Hospital. Flushing avenue. (See class II, division 3.)

Working Women's Vacation Society of Brooklyn. (See class III, division 7.)

BUFFALO — ERIE COUNTY.— Queen City Society for Prevention of Cruelty to Children. Incorporated by special act, chapter 340, Laws of 1879. No. 55 Franklin street.— For the purpose named in title. Children are cared for temporarily only, until the case or cases under consideration can be properly disposed of by the court or courts having jurisdiction of the matter in hand. Number of cases cared for last fiscal year, 663. The society endeavors by its efforts so to manage its operations as best to keep families together, and save them from committal to the penitentiary and the poor-house.

BUFFALO — (Continued).

Cases of actual and designed cruelty are followed up by conviction and punishment by the courts, as prescribed by law to offenders. Controlled by a board of managers. Supported by voluntary contributions. Ogden P. Letchworth, president; P. R. Cunningham, secretary; Rev. Allan P. Ripley, D. D., corresponding secretary; Harry T. Ramsdell, treasurer; B. A. Churchill, superintendent, to whom apply at the office or to any of the officers.

Society for Prevention of Cruelty to Animals. B. A. Rockwood, president; Mrs. Lily Lord, recording secretary; Miss Margaret F. Rochester, corresponding secretary; C. H. Utley, treasurer; H. M. Wright, agent, 22 Park street, to whom apply.

United States Life Saving Station, Buffalo. River, foot of Erie street. Office, 21 Postoffice Building. Apply to the superintendent.

ELMIRA — CHEMUNG COUNTY.—The Elmira Society for the Prevention of Cruelty to Children, incorporated March 1887, under the general statute, and the "Elmira Society for the Prevention of Cruelty to Animals," incorporated January 1891, under the general statute, more popularly known as the "Elmira Humane Society."—For the purpose named in the titles of incorporation, viz.: The enforcement of the laws relating to children and animals. When a child is known to need protection, it is taken and placed in the care of the police matron at the female station-house, until the case is disposed of by the recorder's court, when it is sent to whatever institution is deemed proper by the court. Twelve children and sixteen animals were cared for last year. Both societies are controlled by a united board of directors, and supported by members' dues and by voluntary contributions. Boyd McDowell, president, Elmira; Mrs. Lee, vice-president, Dexter; Miss Florence C. Cottle, secretary, and Charles H. Gridley, treasurer, of Elmira. Apply to any of the officers.

NEW BRIGHTON — RICHMOND COUNTY.—Sailors' Snug Harbor. (See under New York in this division.)

NEWBURGH—ORANGE COUNTY.—Newburgh Society for the Prevention of Cruelty to Children. Incorporated November 26, 1892.—For the prevention of cruelty to children, and the enforcement, by all lawful means, of the laws relating to or in any wise affecting children. Controlled by a board of nine directors, viz.: Rufus R. Skeel, Alfred Bridgeman, S. Mitchell Akerly, J. Marshall Chew, Frances J. Rains, Leita R. Ramsdell, Rhoda A. Taylor, Mary Akerly, Darwin W. Esmond.

NEW YORK CITY.—American Seamen's Friend Society. No. 76 Wall street. (See class III, division 8.)

American Society for the Prevention of Cruelty to Animals. Incorporated by special act, chapter 496, vol. I, Laws of 1866. Amendatory act, chapter 553, Laws of 1890. No. 100 East Twenty-second street.—To provide effective means for the prevention of cruelty to animals throughout the United States, to enforce all laws which are now or may hereafter be enacted for the protection of animals, and to secure by lawful means, the arrest, conviction and punishment of all persons violating such cases. Controlled by a board of managers. Supported by membership dues and voluntary donations. Jno. P. Haines, president; Geo. G. DeWitt, secretary; Charles Lanier, treasurer. Apply to the headquarters of the society at above address.

American Veterinary College. Hospital and dispensary departments, Nos. 139 and 141 West Fifty-fourth street. (See class VII, division 2.)

Artists' Fund Society of the City of New York. No. 144 West Eighteenth street. (See class III, division 8.)

Baptist Ministers' Home Society of New York. No. 2020 Vyse street, West farms. (See class V, division 3.)

Blue Anchor Society, or New York State Auxiliary to the Women's National Relief Association. Incorporated March 11, 1882, under the general statute. Central office, 105 East Twenty-second street.—To furnish relief to those rescued from shipwreck, by sending food, clothing and other necessities, to

NEW YORK CITY — (Continued).

the United States saving stations, and in public emergency, to extend aid to the suffering. Seventy boxes of supplies sent to the United States life saving stations last year, and \$3,488 expended for aid. Controlled by board of officers and executive committee. Supported by annual subscriptions and donations. Mrs. Gabriel Kent, president, 59 West Thirty-sixth street; Mrs. H. J. Newton, 128 West Forty-third street; Mrs. G. G. Porter, 201 West Fifty-fifth street, and Mrs. Jno. A. Kennedy, 135 West Twenty-second street, vice-presidents; Miss Alice Sanford, secretary, Orchardside, Sing Sing, N. Y.; N. L. Cort, treasurer, 245 Water street; Mrs. J. S. Finney, assistant treasurer, 157 East Twenty-first street. Apply for information to the president or secretary. Applications are made by the general superintendent of United States Life Saving Service, Washington, D. C., or by the captain of a life saving district or a station.

Charity Fund of the Chamber of Commerce. Incorporated in 1883. No. 34 Nassau street.—Consists of \$57,000 bequeathed by the late John C. Green, the income of which is to be applied to the relief of distressed merchants who shall have been members of the chamber, in good repute, and whose misfortunes were not the result of or attended by any dishonorable transaction on their part. Apply to the trustees of the fund, through George Wilson, secretary of the Chamber of Commerce. (Copied from the "New York Charities' Directory," as no reply has been received.)

German Ladies' Society for the Relief of Destitute Widows, Orphans and Sick Persons. (See class III, division 1.)

Grand Army of the Republic. Room 4, City Hall. (See class IV, division 2.)

Havens' Relief Fund Society. Incorporated by special act, January 3, chapter 301, Laws of 1871. Controlled by a board of managers who administer an endowment received from invested funds, bequeathed by the late Charles G. Havens, through other societies or almoners carefully chosen, who give temporary relief to the unobtrusive suffering

NEW YORK CITY — (Continued).

endured by industrious and worthy persons, to aid in restoring them to self-support. John D. ———, president, 29 West Thirty-fourth street; Andrew Warner, vice-president, 326 East Fifteenth street; ——— Townsend, secretary, 241 West Seventy-first street; John H. Pell, treasurer, 6 East Thirty-sixth street.

Home Hotel Association. Incorporated September 24, 1888, under the general statute. Institution opened March, 1888. The home is at Ann's avenue, corner East One Hundred and Thirty-fifth street.—To provide a home and fund for needy authors, artists and others in the various professional walks of life, without regard to age, sex or creed; for those too aged to work or in ill-health, or for those out of employment, who are given temporary work. Capacity for twelve. Average number of inmates, eight. Last year there were twenty-eight beneficiaries. Controlled by a board of managers. Supported by donations and subscriptions. Miss Mary A. Fisher, president, 158 St. Ann's avenue; Miss E. Ida Williams, recording secretary, 29 East One Hundred and Fourteenth street; Mrs. Charles T. Harris, corresponding secretary, 118 East Fifty-fourth street; General James G. Wilson, treasurer, 15 East Seventy-fourth street; Mrs. A. Inez Ludlow, assistant treasurer, 118 East Fifty-fourth street, to whom apply, or to the president, as above.

Home of Industry and Refuge for Discharged Convicts. No. 224 West Sixty-third street. (See class VIII, division 4.)

Life Saving Benevolent Association of New York. Incorporated by special act, chapter 139, Laws of 1849; amendatory act passed, chapter 41, Laws of 1851. Office, 51 Wall street.—Has for its object the encouragement and rewarding of meritorious conduct in rescuing persons from drowning, in cases of shipwreck and otherwise. Fifty-four persons received medals or money for their courageous achievements last year. Controlled by a board of managers. Supported by voluntary contributions and income from invested fund. Wm. H. H. Moore, president, 22 East Thirty-third street; Walter R. T.

NEW YORK CITY — (Continued).

Jones, vice-president, 1 East Thirty-ninth street; Joseph H. Chapman, treasurer, 246 West Forty-second street. Apply to the officers or to the committee on awards, at 51 Wall street.

McAuley Water Street Mission. No. 316 Water street, near Franklin square. (See class III, division 1.)

New York City Mission and Tract Society, Woman's Branch, United Charities Building, Fourth avenue and Twenty-second street. (See class VII, division 8.)

New York College of Veterinary Surgeons, Hospital for Animals. No. 332 East Twenty-seventh street. (See class VII, division 2.)

New York Colored Mission. No. 135 West Thirtieth street. (See class III, division 1.)

New York Society for the Prevention of Cruelty to Children. Incorporated by special act April 27th, chapter 130, Laws of 1875. Amendment chapter 30, Laws of 1886. Institution opened in 1880 at No. 100 East Twenty-third street.— For the prevention of cruelty to children, and the enforcement by all lawful means of the laws relating to or in any wise affecting children under 16 years of age, who, in special cases, are cared for, clothed and provided with a temporary home. Present capacity for thirty-two, to be largely increased in the new building. Average number of inmates twenty-five each night. Controlled by board of directors. Supported by voluntary contributions. Elbridge T. Gerry, president; Dallas B. Pratt, treasurer; E. Fellows Jenkins, secretary and superintendent, to whom apply at any hour, day or night, or to the police or judiciary.

Passover Relief Association. (See class III, division 1.)

Prison Association of New York. Incorporated by special act chapter 163, Laws of 1846; amendments passed chapter ——— Laws of 1866, and chapter 822, Laws of 1879, Revised Statutes. Office at No. 135 East Fifteenth street. Branch office at No. ——— ——— ———, Brooklyn.— Aims to improve the general system and ameliorate the condition of prisoners,

NEW YORK CITY — (Continued).

whether detained for trial, held as witnesses or convicted. Also aids reformed convicts after their discharge from a New York prison, within the period of six months. The Tombs and courts are visited daily. About 1,300 cases were assisted and advised last year. Controlled by an executive committee. Supported by voluntary contributions and occasional allowances from excise money. Theodore W. Dwight, president; W. M. F. Round, corresponding secretary; Eugene Smith, secretary; Cornelius B. Gold, treasurer, 18 Wall street. Apply in person to the corresponding secretary, at 135 East Fifteenth street, from 9 a. m. until 5 p. m.

NOTE.—It is not safe to deal with or assist any real or pretended ex-convicts except by referring them, or better still, by going with them, to the Prison Association, or to the House of Industry and Refuge for Discharged Convicts, No. 224 West Sixty-third street, near Amsterdam avenue. Many falsely pretend to be convicts, because public sympathy is so deeply touched by the difficulties which this class encounter. (See "New York Charities' Directory.")

Sailors' Snug Harbor. Incorporated by special act February 6, 1806. Amendments passed March 25, 1814; and April 19, 1828. Office, 76 Wall street. Institution was opened August, 1833, at Sailors' Snug Harbor, New Brighton, Staten Island.—To provide a home for aged, decrepit and worn-out sailors, who are without adequate means of self-support, and can furnish evidence of having sailed at least five years under the flag of the United States. Capacity for 1,000. Average number of inmates, 854. Controlled by a board of trustees. Supported by income derived from properties bequeathed by the will of the founder. G. D. S. Trask, governor; Richard Luce, agent, to whom apply at 74 Wall street, from 10 a. m. to 3 p. m.

Society for the Prevention of Crime. Incorporated by special act. ————— 1878. No. 923 Broadway.—For the suppression of crime by the enforcement of the laws, and by arousing public opinion, especially in regard to the violation of excise laws, gambling and public nuisances. Controlled by an executive committee and a board of directors. Supported by voluntary contributions. Rev. C. H. Parkhurst,

NEW YORK CITY — (Continued).

D. D., president, 133 East Thirty-fifth street; Rev. Henry M. MacCracken, D. D., and Wm. H. Arnoux, vice-presidents; Wm. Wade, secretary; Edward A. Newell, treasurer, 859 Broadway; Frank A. Lewis, superintendent. Apply to D. J. Whitney, 83 Leonard street, from 10 a. m. to 3 p. m.

Society for the Relief of Poor Widows with Small Children. (See class III, division 1.)

Society for the Relief of the Destitute Blind of the City of New York. Amsterdam avenue and One Hundred and Fourth street. (See class VI, division 1.)

Society for the Relief of Widows and Orphans of Medical Men. Incorporated by special act April 19, 1843.—To help the classes named in the title, when thus related to any one who was a member of the society, for two years previous to his death. In special cases an aged parent or sister, who had been assisted by the deceased member, may receive relief. Benefits are bestowed on widows whose income is less than \$800, and less than \$200 for a boy under 16 years of age, or a girl under 18 years. Ten widows and four children were assisted last year. Controlled by a board of managers. Supported by income from permanent funds. Everett Herrick, M. D., president, 126 Madison avenue; John H. Hinton, treasurer, 41 West Thirty-second street; Andrew F. Currier, secretary, 159 East Thirty-seventh street, to whom apply for blank form of application to be filled out.

United Hebrew Charities of the City of New York. No. 128 Second avenue. (See class III, division 1.)

United States Army Aid Association. Incorporated December 6, 1886, under the general statute. Organized in 1850. Office, No. 82 Nassau street.—For the promotion of the religious, moral and intellectual interests of the 25,000 enlisted men of the United States Army. Controlled by a board of trustees. Supported by voluntary contributions. Colonel Wm. A. Thompson, president, Philadelphia, Pa.; Henry M. Lester, treasurer, 581 Broadway; John B. Ketchum, corres-

NEW YORK CITY — (Continued).

ponding secretary, to whom make application, and address all correspondence.

United States Marine Hospital Service. Office at the Battery.
(See class II, division 3.)

Webb's Academy and Home for Ship-Builders. Incorporated in 1889, under the general statute. Now in course of erection at Sedgwick avenue and Academy street, Fordham Heights.— Designed when completed to afford gratuitous aid, relief and support to the aged, decrepit, invalid, indigent or unfortunate men who have been engaged in building hulls of ships or vessels, in any section of the United States, together with the lawful wives of such persons; also "to furnish to any young man, a native or citizen of the United States, who may, upon examination, prove himself competent, of good character and worthy, gratuitous education in the art, science and profession of ship-building and marine engine-building, both theoretical and practical, together with board, lodging and necessary implements and materials while obtaining such education. Wm. H. Webb, president, 415 Fifth avenue, to whom apply for further information.

Working Girls' Vacation Society of New York City. No. 222 West Thirty-eighth street. (See class III, division 7.)

Working Women's Protective Union. (See class IV, division 1.)

Young Women's Home Society of the French Evangelical Church, etc. No. 431 West Thirtieth street. (See class III, division 6.)

POUGHKEEPSIE — DUTCHESS COUNTY.— Poughkeepsie Society for Prevention of Cruelty to Children. Incorporated February 20, 1892, under the general law.— For the prevention of cruelty to children and the enforcement by all lawful means, of the laws relating to, or in any wise affecting children. Controlled by eight directors.

ROCHESTER — MONROE COUNTY.— American Association to Promote the Teaching of Speech to the Deaf. (See class VI, division 2.)

ROCHESTER — (Continued).

Humane Society (The), popularly so called, comprising, first, The Rochester Society for the Prevention of Cruelty to Children. Incorporated September 6th, chapter 130, Laws of 1875. (Second) The Humane Society of Rochester, N. Y., for the Prevention of Cruelty to Animals. Incorporated August 10th, chapter 490, Laws of 1888. Amendatory act chapter 30, Laws of 1886. General office for both societies, 90 Sophia street.—For purposes named in titles. Both societies are controlled by the same board of directors. Supported by voluntary contributions. E. V. Stoddard, M. D., president, 68 South Washington street; Mrs. Emil Kuichling, recording secretary, 209 North Clinton street; Mrs. E. P. Hall, corresponding secretary, 67 Frank avenue; Mrs. L. P. Ross, treasurer, 506 West avenue. Apply at the office during business hours.

Rochester Society for the Prevention of Cruelty to Children. Incorporated in 1875. No. 90 Sophia street. (See "The Humane Society" in this division.)

SARATOGA — SARATOGA SPRINGS.—Saratoga Society for the Prevention of Cruelty to Children. Incorporated August 4, 1880, under the general statute. Room 20, Ainsworth place, Broadway. Known also as the Saratoga Humane Society. Organized in October, 1881.—For the prevention of cruelty to children and animals. In addition the society employs a few special agents in a few of the towns of the adjoining counties to enforce the laws relative to children and animals. Controlled by a board of trustees and by an executive committee. Supported by voluntary contributions. Mrs. Katherine Y. Ehninger, president; Mrs. Sarah E. McEwen, treasurer; Edward D. Selden, secretary and superintendent, to whom apply at the office by letter or in person.

SING SING — WESTCHESTER COUNTY.—Ossining Branch of the American Society for Prevention of Cruelty to Animals. Incorporated March 12, 1883, under the general statute.—

SING SING — (Continued).

For the purpose indicated in title. Controlled by a board of officers. Supported by voluntary contributions. Mrs. H. C. Symonds, president; Miss M. Dusenberry, secretary; E. G. Blakeslee, treasurer.

Sing Sing Society for Prevention of Cruelty to Children. No. 209 Main street. No information has been received from the officers.

SYRACUSE — ONONDAGA COUNTY.—Bureau of Labor and Charities of Syracuse. No. 4 Hendricks block. (See class I.)
Syracuse Society for Prevention of Cruelty to Children. (See "Bureau of Labor and Charities of Syracuse," class I.)

TROY — RENSSELAER COUNTY.—Rensselaer County Society for the Prevention of Cruelty to Children. For purposes named in title. Controlled by a board of five directors.

UTICA — ONEIDA COUNTY.—Utica Humane Society has no report to make.

VERSAILLES — CATTARAUGUS COUNTY.—Thomas Asylum for Orphan and Destitute Indian Children. (See class V, division 2.)

WATERTOWN — JEFFERSON COUNTY.—Jefferson County Society for the Prevention of Cruelty to Children. Incorporated by special act April 26th, chapter—————
To prevent cruelty to children in the county, by appointing officers and agents to carry out the objects of the society and to do such things in reference thereto, as are allowed by law. Controlled by a board of trustees. Supported by voluntary contributions. J. C. Knowlton, president, Sterling place; Lotus Ingalls, vice-president, 17 Mullin street; Jesse Ayers, treasurer, 6 Sherman street; Mrs. W. C. Walker, secretary, 4 Sherman street, to whom apply or to any of the officers.

YONKERS — WESTCHESTER COUNTY.—The Yonkers Society for the Prevention of Cruelty to Children. Incorporated December 10, 1881, under the act of 1875, chap-

YONKERS — (Continued).

ter 130.—For the prevention of cruelty to children and the enforcement by lawful means of the laws relating to or in anywise affecting children. Seventy-five complaints involving 178 children were acted upon last year. Controlled by a board of officers. Supported by charitable contributions. Galusha B. Balch, M. D., president; Thos. B. Caulfield, vice-president; Rev. J. Hendrick de Vries, secretary; Lyman Cobb, Jr., treasurer; Matt. H. Ellis, counsel, all of Yonkers. Apply to the president, to whom all complaints should be made.

DIVISION 4.—AID FOR THE SICK, OTHER THAN MEDICAL.

BROOKLYN — KINGS COUNTY.—Brooklyn Association for Improving the Condition of the Poor. No. 104 Livingston street. (See class III, division 1.)

Brooklyn Diet Dispensary. General office, No. 21 De Kalb avenue. (See class VII, division 8.)

Brooklyn Flower and Fruit Charity. Incorporated February, 1883, under the general statute. No. 195 Montague street.—For the distribution of flowers, fruit, delicacies and reading matter to and among the sick poor in hospitals and other public institutions, and in private homes in the city of Brooklyn. Five thousand bouquets, and large supplies of fruits, delicacies, groceries, plants, toys and magazines were distributed last year. Controlled by a board of managers. Supported by voluntary contributions. Miss J. H. Duckwitz, president, 279 Henry street; Mrs. Henry C. Bowen, vice-president, 90 Willow street; Mrs. Henry L. Pratt, secretary, 69 Orange street; Miss Josephine Hawks, treasurer, "The Roebling," Columbia Heights; Miss Louie Hollis, librarian. Apply to any of the officers.

St. Phoebe's Mission. De Kalb avenue, near Fort Greene. (See class VII, division 8.)

BUFFALO — ERIE COUNTY.—Buffalo Deaconess' Home of the Methodist Episcopal Church. (See class V, division 2.)

District Nursing Association. (See class VII, division 8.)

NEW YORK CITY.—Children's Aid Society (The). United Charities Building, Fourth avenue and Twenty-second street. (See class III, division 3.)

Little Sisters of the Assumption, Nursing Sisters of the Poor in their Own Homes. No. 312 East Fifteenth street. (See class VII, division 8.)

New York Association for Improving the Condition of the Poor. United Charities Building, Fourth avenue and Twenty-second street. (See class III, division 1.)

New York Bible and Fruit Mission to our Public Hospitals. Incorporated in 1878, under the general statute; and amendment filed April 5, 1887. Nos. 416 to 422 East Twenty-sixth street.—To provide the patients in our public hospitals with fruit and other light nourishment; to maintain a coffee-house, also a lodging-house, well equipped with beds, and hot and cold baths, to be opened to the public at the lowest rates; to maintain a broom factory, as a means of test employment to ex-convicts, and needy men out of work; to provide for the intellectual and spiritual welfare of all, who live in the surrounding districts, by visiting the poor in their homes, and by meetings of entertainment, industrial classes and such other means as the board may devise. To endeavor to ameliorate and elevate the condition of the children and poor of the tenements in the neighborhood, and to aid and reform the ex-convicts, the inebriate and the convalescent. Conducts a kitchen garden and industrial classes for poor children, also carries on protective missionary work among women coming to the city, and has a loan relief fund, also a fresh air fund, and gives Christmas and Thanksgiving dinners to the poor of the vicinity. Controlled by a board of trustees, not exceeding thirty. Supported by income from coffee-house, broom factory and by voluntary contributions. Mrs. Wm. T. Blodgett, president, 24 West Twelfth street; Mrs. Frederick A. Snow, recording secretary, 21 West Twelfth street; Mrs. Stanley W. Dexter, corresponding secretary, 12 East Twelfth street; Charles S. Fairchild, treasurer, 76 Clinton place; J. A. McEachron, superintendent of lodging-house; Miss S. A.

NEW YORK CITY — (Continued).

- Chinn, superintendent of coffee-house. Apply to the manager or superintendent at the mission, 41 East Twenty-sixth street.
- New York Diet Kitchen Association.** (See class VII, division 8.)
- New York Home for Convalescents.** No. 443 East One Hundred and Eighteenth street. (See class VII, division 2.)
- New York Protestant Episcopal City Mission Society.** General office, No. 38 Bleecker street. (See class III, division 1.)
- New York Tenement House Chapter of the International Order of the King's Daughters and Sons.** No. 77 Madison street. (See class VII, division 8.)
- St. John's Guild.** Office, No. 501 Fifth avenue. (See class VII, division 9.)
- Sanitarium for Hebrew Children.** Office, No. 124 East Fourteenth street. (See class VII, division 9.)
- Sisters of the Annunciation of the Blessed Virgin Mary.** (See class VII, division 8.)

STAPLETON — RICHMOND COUNTY.—Staten Island Diet Kitchen. (See class VII, division 8.)

TROY — RENSSELAER COUNTY.—Helping Hand Mission. (Class VIII, division 5.)

C L A S S V.

PERMANENT RELIEF OF DISTRESS — (Other than for the Sick or Defective).

[The Charity Organization Societies (see pages 1-14) seek to secure for the individual cases brought to its notice, the benefits named in this class from the most suitable institutions and societies, or to direct thereto.]

DIVISION I.—ALMS-HOUSES.—See Also Poor-Houses.

ALBANY — ALBANY COUNTY.—Albany City Alms-house. (See class V, division 4.)

FLATBUSH — KINGS COUNTY.—Kings County Alms-house.

KINGSTON — ULSTER COUNTY.— Kingston City Alms-house.

NEWBURGH — ORANGE COUNTY.— Newburgh City Alms-house.

NEW YORK CITY (Blackwell's Island).— Alms-house of the Department of Public Charities and Correction.—For infirm adult persons entirely destitute. There is one for each sex. The Alms-house Hospital cares for the sick inmates of the alms-house only. Capacity, 148. Apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

OSWEGO — OSWEGO COUNTY.— Oswego City Alms-house. Incorporated April tenth, chapter 471, Laws of 1886, under the act to amend the charter of the city of Oswego. Opened May, 1867.—For the care and maintenance of the old and infirm poor of the city of Oswego, except such as are insane or afflicted with contagious diseases. Capacity for 100. Average number of inmates, forty-seven. Controlled by the commissioners of public charity. Supported by the city. C. S. Newell, superintendent; Chester Penfield, James Dunn, E. D. Stacy and John Phillips, commissioners of public charity, to whom apply at any time.

POUGHKEEPSIE — DUTCHESS COUNTY.— Poughkeepsie City Alms-house. Junction of Jewett avenue and Maple avenue.

UTICA — ONEIDA COUNTY.— Utica City Alms-house.

Asylums for Children — See Homes for Children Only, Relief for the Defective and Afflicted and Reformatories for Children.

Asylums for Adults — See Homes for Adults only, Hospitals for Insane, Relief for the Defective and Afflicted and Reformatories.

DIVISION 2—HOMES FOR CHILDREN ONLY. See Also, Temporary Homes (Class III), Relief for the Defective and Afflicted and Reformatories.

ALBANY, ALBANY COUNTY.—Albany Hospital for Incurables.

No. 390 Madison avenue. (See class VII, division 2.)

Albany Orphan Asylum, Robin street and Western avenue.

(See "Society for the Relief of Orphan and Destitute Children, in the city of Albany," in this division.)

Corning Foundation for Christian Work, in the Diocese of Albany. (See St. Margaret's Home for Infants, in this division, and Child's Hospital, class VII, division 4.)

Dominican Convent and Asylum. (See "Retreat for Ladies and Homeless Girls" in this division.)

Fairview Home for Friendless Children. (See under Watervliet, Albany county, West Troy post-office, in this division.)

Lathrop Memorial (The), deeded to "The Society for the Relief of Orphan and Destitute Children, in the city of Albany, (Albany Orphan Asylum), July 20, 1891, by Mrs. Jane L. Stanford (Mrs. Leland Stanford), of California, who erected and endowed it in memory of her parents, Dyer and Jane Ann Lathrop, who were instrumental in the founding of the above Society and Asylum. Opened in January, 1892, as a branch of "The Albany Orphan Asylum." No. 132 Washington avenue. To give a home to orphans and half-orphans, of both sexes, under 7 years of age, of poor parents.—Idiotic and epileptic children and those with contagious diseases are excluded. Capacity for fifty. Average number of inmates, forty-six. If not placed out by indenture, or adoption, into respectable homes by the time they are 7 years of age, they are transferred to the Albany Orphan Asylum. Children not over 6 years of age are also received from the institutions in Albany and vicinity whose parents can pay a small board. Controlled by a board of thirty lady trustees. Supported by interest on endowment and in case of half-orphans, by small payments from children's relatives. John F. Rathbone, president, 119

ALBANY — (Continued).

Washington avenue; A. V. DeWitt, secretary, 27 South Hawk street; David A. Thompson, treasurer, 53 Lake avenue; Albert D. Fuller, superintendent, Western avenue and Robin street. Apply either at the office of the "Lathrop Memorial," or at the Albany Orphan Asylum, Western avenue and Robin streets.

Open Door Mission. (Home for Incurables.) No. 3 Columbia place. (See class VII, division 2.)

Orphans' Home of St. Peter's Church (The). Incorporated 1876. Opened in October, 1864. No. 9 High street. To care for girls over 2 and under 16 years of age, either orphans or having parents unable to care for them, and to give them an elementary education and to train them as household servants. At a suitable age situations are found for them, or they are adopted or returned to relatives or guardians. Capacity for twenty-five. Average number inmates, twenty-two. Controlled by a board of trustees and a board of managers. Supported by a small endowment and by voluntary contributions by members of St. Peter's church. Rev. W. W. Battershall, D. D., president, 31 Lodge street; Miss Clara C. Griswold, secretary, 58 Willett street; Mrs. G. S. Weaver, treasurer, 162 State street. Apply to the committee on admission, Mrs. James A. Greig, 28 South Hawk street, and Mrs. L. H. Tucker, 174 Washington avenue.

Retreat for Ladies and Homeless Girls (Dominican Convent and Asylum). Incorporated under the general statute. Opened 1882, No. 886 Madison avenue. Branch house at Saratoga Springs.—A retreat for ladies and homeless girls, needing instruction and probation. Capacity for fifty. Controlled by the Sisters. Supported by proceeds of work and donations. Mother de Ricci, president; Mother Aloysius, secretary; Mother Loyola, treasurer. Apply to the mother superior at the convent, 886 Madison avenue.

St. Ann's School of Industry of the House of the Good Shepherd. Central avenue. (See class VIII, division 5.)

St. Colman's Industrial School and Orphan Asylum. (See entered under Watervliet, Albany county, in this division.)

ALBANY — (Continued).

St. Margaret's Home for Infants of the Corning Foundation for Christian Work in the Diocese of Albany. Incorporation included in corporation known as "The Corning Foundation for Christian Work." Opened November 1, 1883. No. 2 Columbia place.—For the care of destitute, homeless or motherless infants and young children. No contagious cases are received. Capacity for forty. Average number of inmates, twenty-eight. Seventy-nine beneficiaries last year. Controlled by the trustees of the Corning Foundation and by the Sisters of the Holy Child Jesus. Supported by church and voluntary contributions, and appropriations from cities, towns and counties. Apply personally at any time to the sisters in charge at the home, or to the Child's Hospital, Albany.

St. Vincent's Orphan Society in the City of Albany. Incorporated by special act, chapter 152, Laws of 1849. By certificate filed with the Secretary of State July 1, 1882, the number of trustees was increased to nineteen.—Maintains three asylums, located as follows: Male branch, Western avenue; female branch, Elm street; child's nursery and kindergarten, in the Schuyler mansion, Clinton street.—Provides relief, maintenance and education to orphan and destitute children, boys under 14 years of age and girls from 2 to 16 years of age, residents of Albany county, and sent by the superintendent or overseers of the poor. They are given a plain education and instructed and trained in floriculture, farming, tailoring and household work. Whole orphans or abandoned children are adopted or placed in good homes in the country; homes are also found for the girls and boys at a suitable age, or they are returned to relatives. Capacity for and average number of inmates in all asylums, 350. The male branch is under the care of the Brothers of the Christian Schools, and the female branch and nursery are under the charge of the Sisters of Charity. Controlled by the Brothers of the Christian Schools, under the direction of Rev. Francis McNirney. Supported by the county and by church and voluntary contributions. Apply to the brothers at the asylum, or to the overseer of the poor.

ALBANY — (Continued).

Society for the Relief of Orphan and Destitute Children, in the City of Albany (The), commonly known as the "Albany Orphan Asylum." Incorporated March thirtieth, chapter 94, Laws of 1831. Amendatory act, chapter 420, Laws of 1879. Opened 1829, Western avenue and Robin street; branch, known as "The Lathrop Memorial," (which see in this division), 132 Washington avenue. Unsectarian.—To give a home and a common school education to destitute children and to inculcate habits of industry and good morals so as to fit them to become self-supporting, law-abiding citizens. Orphans, half-orphans, destitute and homeless children of both sexes, of sound minds, from 2 to 16 years of age, from whatever cause, coming from any part of the State, are received in the asylum upon orders from the superintendent or overseers of the poor or county judges. Those under 7 years are sent to the "Lathrop Memorial." Idiots, epileptic children and those afflicted with contagious diseases are excluded. Capacity for 500. Average number in both asylums, 536. About 1,200 were cared for in the institution in its homes and under indenture last year. Children are also adopted and indentured into good homes in the country. Controlled by a board of trustees. Supported by donations, interest of invested funds, and money received from the counties and towns for support of committed children. In no case is full cost received for any child. John F. Rathbone, president, 119 Washington avenue; A. V. De Witt, secretary, 27 South Hawk street; David A. Thompson, treasurer, 53 Lake avenue; Albert D. Fuller, superintendent, to whom apply, personally or by letter, at the asylum, Western avenue and Robin street.

AMITYVILLE — SUFFOLK COUNTY.—Queen of the Rosary Asylum, branch of the "Orphan Home," of the Roman Catholic Church of the Most Holy Trinity, which see under Brooklyn Homes in this division.

AMSTERDAM — MONTGOMERY COUNTY.—Children's Home Association of Amsterdam, New York. Incorporated July

AMSTERDAM — (Continued).

16, 1883. Under the general statute. The home was opened in October, 1883. Spring street.—To furnish a permanent home for destitute children, and a Day Nursery where young children may be left and cared for during the hours of labor. Destitute children under 10 years of age, of sound mind and body, residents of Montgomery county, are received on proper application. Capacity for twenty-five. Average number of inmates, seventeen. Controlled by a board of managers, elected annually from the Evangelical churches of Amsterdam. Supported by voluntary contributions, etc. Mrs. W. K. Greene, president; Mrs. M. A. Trapwell, corresponding secretary; Mrs. Tunis Peck, recording secretary; Miss H. K. Bennett, treasurer, all of Amsterdam. Apply to the committee on application at the home by letter or in person.

AUBURN — CAYUGA COUNTY.—Auburn Orphan Asylum.

Incorporated by special act, May 14th, chapter 404, Laws of 1887. No. 124 North street.—To maintain an asylum in the city of Auburn, for the care, support and maintenance of orphan, half-orphan and destitute children from the counties of Cayuga, Seneca and Tompkins only, declared to be a public charity by the board of charities of Auburn, or its superintendent. Capacity for 150. Average number of inmates, 145. Controlled by a board of officers and the Sisters of St. Joseph. Supported by public appropriations and by private donations. W. J. Seymour, president, Auburn; Thomas A. Hendricks, vice-president, Union Springs; W. Mulheron, secretary and treasurer; and Amanda S. Hickey, M. D., attending physician, Auburn. Apply to the matron in charge of the asylum.

Cayuga Asylum for Destitute Children. Incorporated by special act, April 10, 1852. Amendatory acts chapter 173, Laws of 1875; and chapter 113, Laws of 1873. Opened in 1853. Owasco street.—To provide a temporary home for orphan, half-orphan and destitute children, between the ages of 2 and

AUBURN — (Continued).

16 years, residing in Cayuga county; to supply their necessities, to promote their moral and intellectual improvement, and to fit them for situations of usefulness, and to find comfortable homes for them. Nonsectarian. Capacity for and average number of inmates, 113. Controlled by a board of trustees, and a board of managers. Supported by appropriations from the board of supervisors, and by charitable contributions. Chas. Standart, president; James Seymour, Jr., secretary and treasurer of board of trustees; Mrs. James Seymour, first directress; Mrs. Cyrenius Wheeler, Jr., second directress; Mrs. D. H. Schoonmaker, third directress; Mrs. Mary C. Steel, recording secretary; Mrs. F. H. Lee, corresponding secretary; Mrs. A. H. Smith, treasurer of board of managers. Apply to Mrs. Jane L. Rogers, superintendent, at the asylum.

BALMVILLE (near Newburgh) — ORANGE COUNTY.—The Branch of the "Institution of Mercy, New York," formerly at Balmyville, is now removed to Pelham Bay Park, Westchester county. (See class V, division 2.)

BATH — STEUBEN COUNTY.—Davenport Institution for Female Orphan Children. Incorporated by special act, chapter 132, Laws of 1863. Opened in February, 1863.—To provide without charge, destitute girls with clothing, food and schooling—in brief, to furnish them with a home until they are of suitable age to earn their living, or the trustees find other homes in private families, where in their judgment that they be better cared for. Applicant must be either an orphan, or the child of a destitute mother, or in special cases of a destitute father, over 5 and under 9 years of age, and sound in body and mind. Complete surrender of the girl to the full control of the institution is required so long as the trustees deem best. Capacity for seventy-five to 100. Average number of inmates, sixty. Controlled by a board of trustees. Supported by the interest on invested funds,

BATH — (Continued).

bequeathed by the late Ira Davenport, of Bath. John Davenport, president; Ira Davenport, treasurer; James Lyon, of Bath, and Mrs. Sherman Rogers, of Buffalo, trustees; Mrs. J. L. McPherson, matron, through whom apply to the trustees at the institution.

BINGHAMTON — BROOME COUNTY.—St. Mary's Orphan Home. Incorporated ———, 1878, under the general statute. Opened March, 1878.—To educate and care for poor and destitute children of both sexes, under 18 years of age, committed by the overseers of the poor, or by the parents or guardians, and who are adopted, or at a suitable age, are indentured into good families. Capacity for 200. Average number of inmates, 100. Controlled by a board of trustees and the Sisters of St. Joseph. Supported by an appropriation for committed children and by donations. Rev. J. S. F. Hourigan, president; Rev. N. J. Quinn, vice-president; E. Mulhouse, M. D., secretary; F. W. Downs, treasurer, all of Binghamton. Apply to any of the trustees or to the overseers of the poor at any time.

Susquehanna Valley Home and Industrial School for Orphan and Indigent Children. Incorporated March seventeenth, under the general statute. Opened in September, 1869. East end of Conklin avenue.—To afford a Christian home and secular and religious training for homeless and indigent children and orphans of both sexes over 2 and under 16 years of age, received from any part of the State on order of the superintendent or overseer of the poor, and to secure them adoption into families of respectability. Idiotic children and those suffering from contagious diseases are not admitted. Capacity for 150. Average number of inmates, 122. Controlled by a board of trustees and managers. Supported by a charge of one dollar and seventy-five cents per capita per week from all counties except Broome, which pays two dollars, supplemented by contributions and labor through and by an assistant board of managers. Joseph P. Noyes, presi-

BINGHAMTON — (Continued).

dent; Charles A. Wilkinson, secretary; Alonzo C. Matthews, treasurer. Apply to the superintendent at the home, or to the superintendent or overseers of the poor.

BLAUVELTVILLE — ROCKLAND COUNTY.—Asylum and Industrial School of the "Asylum of the Sisters of St. Dominic," which see under New York Homes in this division.

BROOKLYN — KINGS COUNTY.—Brooklyn Benevolent Society (Trustees and Associates of the). Incorporated by special act, May 10, 1845. Office No. 84 Amity street.—For the support, maintenance and education of poor Catholic orphan children between 4 and 14 years of age; and also to assist worthy poor families in distress, without distinction, by means of agents for allotted districts, and appropriations given at the office. Over 5,500 beneficiaries last year. Controlled by a board of trustees. Supported by interests from mortgages, ground rent, etc., by will of Cornelius Heeney. Andrew Dougherty, acting president, 13 East Sixty-fifth street; John McGreevey, secretary, 142 Madison street; Kieran Egan, treasurer, 232 Clermont avenue; W. Taaffe, agent, to whom apply at No. 84 Amity street.

Brooklyn Howard Colored Orphan Asylum. Incorporated September 7, 1868. Organized in 1866 under the name of the "Homes for the Children of Freedwomen. Dean street, near Troy avenue.—To shelter, protect and educate the destitute orphan children of colored parentage, and to instruct said children in useful trades or occupations, also other destitute and homeless colored children. Capacity for 150. Average number of inmates, 133. Controlled by a board of managers, and a board of trustees. Supported by voluntary contributions and board of pay inmates. Mrs. L. A. Cooper, president, 8 Fair street; Mrs. S. R. Thompson, vice-president, 132 Troy avenue; Mrs. S. O. Brown, corresponding secretary, 1682 Bergen street; Mrs. G. Groves, recording secretary, 8 Fair street; Mrs. M. A. Johnson, treasurer, 769 Herkimer street; Rev. W. F. John-

BROOKLYN — (Continued).

son, superintendent, 769 Herkimer street, to whom apply for admission.

Children's Home of St. Mary's Female Hospital. No. 155 Dean street. (See class VIII, division 4.)

Brooklyn Industrial School Association and Home for Destitute Children. Sterling place, near Vanderbilt avenue. (See class III, division 3.)

Brooklyn Nursery and Infants' Hospital. No. 396 Herkimer street. (See class VII, division 4.)

Brooklyn Training School and Home for Young Girls. No. 336 Fourteenth street, near Sixth avenue. (See class III, division 5.)

Church Charity Foundation of Long Island (The). Incorporated under the general statute as "The Church Charity Foundation." An act to amend "The Church Charity Foundation of the County of Kings," was passed April 14, 1852; amended by acts passed April 28, 1868, and June 2, 1888, when the corporation was changed to the above title, "The Church Charity Foundation of Long Island," in order to include in its functions the counties of Kings, Queens and Suffolk. The institution was opened in 1851, at Atlantic avenue, corner Albany avenue; branches at Albany avenue, corner Herkimer street; Atlantic avenue, corner Waverly avenue. Its various departments include "St. John's Hospital," "The Orphan Home," "The Home for the Aged," "The Orphan Press" and the "Atlantic Avenue Dispensary" (which see under their several notices).—The objects of the corporation are to establish and maintain one or more houses for such indigent, aged persons and indigent orphan and half-orphan children, and other children left in a destitute and unprotected state and condition as it may receive and have under its care, and to educate such children, and to establish and maintain one or more hospitals, dispensaries or other institutions for the shelter, support and relief of such sick or infirm, or indigent persons, as it may receive under its care, or otherwise minister to, and to establish and maintain such other institutions for

BROOKLYN — (Continued).

charitable or reformatory uses and purposes as may be determined upon by the board of managers. Applicants for the hospital are expected to pay when able to do so; no contagious cases are received. Children in good health, from 6 to 10 years of age, are admitted to the orphanage, opened in 1852. Communicants only of the Protestant Episcopal church, over 65 years of age, are received in the Home for the Aged, after paying an initiation fee of \$100; and all property belonging to either the aged or orphans must be surrendered to the institution. The dispensary service is free to the worthy poor. Capacity of the homes and hospital, 280. Average number of inmates, 250. Last year 200 beneficiaries were cared for. Controlled by a board of managers, composed of twenty-five clergymen of the Protestant Episcopal Church, and twenty-five laymen, all communicants and residents of said counties. Supported by an endowment of about \$175,000 and voluntary contributions from individuals and churches. Rt. Rev. A. N. Littlejohn, D. D., Bishop of Long Island, president (ex officio), See house, Garden City; Rev. Charles H. Hall, vice-president, 157 Montague street; N. Pendleton Schenck, secretary, 74 Willow street; Wm. Matthews, treasurer, 19 Pierrepont street; Rev. Albert Carrier Bunn, D. D., rector of the "Foundation," 464 Herkimer street, to whom apply for admission to St. John's Hospital. Mrs. John D. Cocks, chairman executive committee of aged department, 366 State street; Mrs. A. L. Taylor, chairman of executive committee of orphan department, 274 Clinton street. Applications for admission should be made to the chairman of the respective committees, before the third Wednesday of each month.

Convent of the Sisters of Mercy, St. Francis of Assisium Female Orphan Asylum. Incorporated March 8, 1865. Organized in March, 1855. No. 273 Willoughby and Classon avenues.—To educate and teach girls from 4 to 14 years of age a trade. Has also an industrial school, in which the various branches of industry are taught. Capacity for 500. Bishop McDonnell, president, ex-officio; Sister

BROOKLYN — (Continued).

Mary Stephen, directress, to whom apply at the asylum.

No answer was received from the Sisters of Mary.

County Ward Bureau. Office of Commissioners of Charities and Correction, No. 29 Elm place, corner of Livingston street.

Hebrew Orphan Asylum Society of Brooklyn. Incorporated August 18, 1878, under the general statute. Opened July, 1878. No. 386 McDonough street.—For the care of Hebrew orphan children under 15 years of age committed by the Commissioners of Charities, police justices or board of governors of the asylum. Capacity for 120. Average number of inmates, 108. Last year 154 orphans were cared for. Controlled by a board of governors. Supported by city and county appropriations and by voluntary contributions. Ira L. Bamberger, president, 107 Taylor street; Abraham Abraham, vice-president, 63 South Oxford street; A. J. Piddian, secretary, 38 Melrose street; L. Arensberg, treasurer, 219 Adelphi street. Apply to the board of governors for admission.

House of St. Giles the Cripple. No. 193 State street. (See class VII, division 4.)

Industrial School Association of Brooklyn, E. D., Nos. 141 to 153 South Third street. (See class III, division 3.)

Orphan Asylum of the City of Brooklyn. Incorporated by special act, April 15, 1835; amendatory acts passed April 18th, chapter —, 1838; June 27th, chapter —, 1851. May 15th, chapter 304, Laws of 1876. Opened May, 1833. Atlantic and Kingston avenues.—To protect, relieve and instruct orphans and half-orphans in the city of Brooklyn. Children having but one parent, who is destitute, or who has abandoned and neglected to provide for such children, may be received upon the same terms as those who have no parents, upon a legal surrender by the parent, if competent, or by the mayor in cases in which he may act. Sick or diseased children and incurable cases, are not received, and no child shall be received into the asylum from the alms-house, or any similar public institution, within six weeks of the time of their having left such place. Suitable trades are

BROOKLYN — (Continued).

taught the boys, and the girls are instructed in sewing in all its branches. Children must be over 3 years, and boys under 11 years of age, and no child is bound out under 12 years of age, unless taken for adoption. Capacity of asylum, 300. Average number of inmates, 295. Controlled by a board of managers and by an advisory board. Supported by voluntary contributions, appropriations from excise fund and board of education, and by proceeds of an annual fair. Mrs. Anna C. Field, first directress, 158 Hicks street; Mrs. G. H. Nichols, second directress, 253 Clinton avenue; Mrs. J. H. Thorp, third directress, 379 Washington avenue; Mrs. Wm. C. Kellogg, recording secretary, 238 Clinton street; Mrs. J. H. Stevenson, corresponding secretary, Monroe place; Mrs. Peter Palmer, treasurer, 1352 Pacific street. Apply to the executive board the first and third Wednesday in each month at the asylum.

Orphan Asylum Society of the Reformed Churches of Brooklyn and New York, which see under New York Homes in this division, page 204.

Orphan Home (attached to the Roman Catholic Church of the Most Holy Trinity). Incorporated December 5, 1861, under the general statute. Opened in 1863. No. 153 Graham avenue, near Montrose avenue; branch asylums not separately incorporated: "Annunciation," opened July, 1890, 64 Havemeyer street; "St. Leonard's," opened in 1881, 274 Melrose street; "Morgan avenue" at the church of our Lady of Sorrows; "St. Elizabeth's," Jamaica, L. I.; "St. Fidelis," College Point, L. I.; "Queen of the Rosary," opened in 1877, Amityville, L. I.—To support, maintain and educate orphan children of communicants of the German Roman Catholic church (now existing in 1861) in the eastern district of Brooklyn. Capacity for 1,000. Average number of inmates, 990. Controlled by a board of trustees and the sisters of St. Dominic. Supported by friends for board of children, appropriations from the city and counties and voluntary contributions

BROOKLYN — (Continued).

from the institutions. Very Rev. M. May, president, 138 Montrose avenue; F. J. Berlenbach, vice-president, 174 Meserole street; Jacob Zimmer, secretary, 120 Maujer street; John Raber, treasurer, 99 Montrose avenue. Apply for admission in person to the president at any time at the Orphan Home.

Orphan Home of the Church Charity Foundation of Long Island. Albany avenue, corner of Herkimer street, which see in this division.

Roman Catholic Orphan Asylum Society, in the City of Brooklyn, in the County of Kings. Incorporated May 6, 1834, by special act of chapter 303, Laws of 1834. Amendatory act passed April 6, 1865, chapter 308, Laws of 1865. Office Nos. 42 and 44 Court street. Maintains the "St Joseph's Female Orphan Asylum," opened 1834, Sumner and Willoughby avenues; capacity for 625 girls, from 3 to 16 years of age. "St. John's Home for Boys," opened 1850, St. Mark's and Albany avenues; capacity for 1,000. "St. Paul's Industrial School," opened in 1860, for young girls and destitute orphans, Congress and Clinton streets; capacity for 350; a boarding-house is attached to this school for young girls, who find employment outside, and "St. John's Protectory" (Branch Home for Boys), opened 1890, Hicksville, L. I.; capacity for 150.—The objects of the society are to relieve the worthy poor, and to protect, maintain, and educate orphan children. Total number cared for last year in all the homes, 1,933. Controlled by a board of managers and directors. Supported by the county appropriations for its wards, board of excise, board of education, church collections, work of inmates, voluntary contributions and bequests. Rt. Rev. Charles E. McDonnell, D. D., president, 367 Clermont avenue; Jos. W. Carroll, first vice-president, 28 St. James' place; Patrick F. Keany, second vice-president, 462 Vanderbilt avenue; James S. Donovan, secretary, 101 South second street; W. E. McDermott, assistant secretary, 14 Essex street; Daniel J. Byrne, treasurer, 69 Lexington avenue. Apply to the Com-

BROOKLYN — (Continued).

missioners of Charities of Kings county, police justices, Bishop McDonnell, board of managers and directors, and to the superior of the various asylums.

St. Francis of Assisium Female Orphan Asylum of the Convent of the Sisters of Mercy, which see in this division.

St. John's Home for Boys. St Mark's and Albany avenues. (See "Roman Catholic Orphan Asylum Society, in the City of Brooklyn, in the County of Kings," in this division.)

St. John's Protectory, Hicksville, L. I. (See "Roman Catholic Orphan Asylum Society, in the City of Brooklyn," etc., in this division.)

St. Joseph's Female Orphan Asylum. Sumner and Willoughby avenues. (See "Roman Catholic Orphan Asylum Society, in the City of Brooklyn," in this division.)

St. Malachy's Home or Half-Orphan Asylum. Incorporated ————. Opened in 1876. Atlantic and Van Sicklen avenues.—To provide for and educate orphan and destitute children. Boys must be under 10 years of age. Capacity for 135. Average number of inmates, 130. Controlled by the Sisters of St. Joseph. Supported by voluntary contributions and an appropriation from the city. Sister M. Agatha, superintendent, to whom apply at the asylum.

St. Mary's Maternity and Children's Home. No. 155 Dean street. (See "St. Mary's Female Hospital," class VII, division 4.)

St. Paul's Industrial School. Congress and Clinton streets. (See "Roman Catholic Orphan Asylum Society, in the City of Brooklyn, in the County of Kings," in this division.)

St. Vincent's Home of the City of Brooklyn, for the Care and Instruction of Poor and Friendless Boys. Incorporated July, 1869, under the general statute. Opened October, 1869. No. 7 Poplar street.—For the purpose set forth in title, the care and instruction of homeless boys from 7 to 16 years of age. Any homeless boy is received whether so rendered by death or depravity of parents. He receives supper, bed and breakfast, for which a nominal charge of ten cents is made. News-

BROOKLYN — (Continued).

boys, bootblacks, errand boys and others engaged in lawful industrial pursuits are admitted to the home, under the provisions of the constitution. School is held every evening from October first to June first, when boys receive elementary instruction. Hospital cases are excluded. Capacity for forty-five. Average number of inmates, thirty-nine. Last year 232 newsboys were admitted to the home, 14,230 lodgings and 28,077 meals were furnished, and 624 pieces of wearing apparel distributed. Controlled by a board of twenty-six directors. Supported by voluntary contributions, excise fund and cash paid by boys for meals and lodgings. Rt. Rev. Chas. McDonnell, D. D., president, corner Clermont and Green avenues; Bernard Bogan, first vice-president, 65 Court street; Charles A. Hoyt, second vice-president, 15 Pierrepont street; Wm. Emerson, recording secretary, 147 Bond street; J. J. Smith, financial secretary; John Lynch, treasurer, 8 Clinton avenue; J. V. N. Lyle, superintendent, to whom apply at the home.

Sheltering Arms Nursery of Brooklyn. Incorporated February 1, 1873, under the general statute. Opened April, 1870, No. 157 Dean street.—For the care of helpless, orphan and half-orphan children under 7 years of age, also illegitimate children, without any one to care for them. Parents may also place children in the institution by the month, by paying the amount in advance, upon which the committee shall decide. None refused except for want of room or on account of the sickness of applicant, which might endanger the inmates. Children are adopted into respectable families after investigation by the committee. Capacity for 100. Average number of inmates, 95. Last year 179 were cared for. Controlled by a board of trustees and a board of lady managers. Supported by charitable contributions and board for county wards. Rt. Rev. A. M. Littlejohn, D. D., LL. D., president (ex-officio), Garden City, L. I.; Wm. H. Male, first vice-president, 135 Clinton avenue; Daniel Birdsall, second vice-president, 194 Carroll street; S. D. C. Van Bok-

BROOKLYN — (Continued).

kelen, secretary, 108 Gates avenue; Samuel A. Wood, treasurer, 372 Clinton street. Lady managers: Mrs. Samuel A. Wood, president, 372 Clinton street; Mrs. C. B. Lawrence, secretary, 48 Irving place; Mrs. E. A. Bradley, treasurer, 515 Vanderbilt avenue; Mrs. Hannah Mackey, house mother in charge, through whom apply to the committee on admission, adoption and surrender.

Society for the Relief of Friendless Women and Children. No. 20 Concord street. (See class III, division 6.)

BUFFALO — ERIE COUNTY.— Buffalo Children's Aid Society, Newsboys and Bootblack's Home. No. 29 Franklin street. (See class III, division 1.)

Buffalo Deaconess' Home of the Methodist Episcopal Church. Incorporated in 1891, under the general statute, and under the provisions of chapter 446, Laws of 1883. No. 108 South street.—To minister to the poor, visit the sick, pray with the dying, care for the orphans, seek the wandering, comfort the sorrowing. The home does not provide for or receive orphan or destitute children at present, but the deaconesses assist in finding good homes for such children, and render them such other aid and assistance as possible. Controlled and supported by the Methodist Episcopal Church. Apply to the superintendent at the home, at any time.

Buffalo Orphan Asylum. Incorporated by special act, chapter 259, Laws of 1837. Amendatory act, chapter 221, Laws of 1885. No. 403 Virginia street.—To protect, relieve and educate orphan, friendless or destitute children, of sound mind. Capacity for 125. Average number of inmates, 110. Controlled by a board of trustees, elected by life members. Supported by donations and interest on permanent fund. J. B. Sweet, president; C. M. Underhill, vice-president; C. T. Chester, secretary; S. M. Clement, Jr., treasurer. Trustees, F. H. Root, W. H. Gratwick, S. M. Clement, P. P. Pratt, F. G. Fralick, T. G. Avery, H. H. Otis, Walter H. Johnson, F. F. Williams, James Crate, and R. E. Windsor, all of Buffalo. Apply to the president or first directress at the asylum.

BUFFALO — (Continued).

Buffalo Widows' Asylum (St. Mary's Asylum for Widows, Foundlings, Infants and Orphans). Incorporated June 21, 1852, under the general statute. Opened in June, 1854. No. 126 Edward street.—For benevolent and charitable purposes and to found and sustain an asylum for indigent widows, for poor lying-in women, for infants and young children. Capacity for 125 children. Average number, 111. During last year 238 infants and foundlings, seven widows and ninety-four patients were cared for. Controlled by a board of officers and trustees, composed of sisters of charity. Supported by the counties, by collections, donations and by board fees from parents and friends. Apply by letter or in person to the sisters in charge at any time at the asylum.

Charity Foundation of the Protestant-Episcopal Church in the City of Buffalo (The). Church Home for orphans and half-orphan children. Northwest corner of Rhode Island and Seventh streets. (See under Homes for Aged, Class V, division 3.)

Evangelical Lutheran St. John's Orphan Home in Buffalo, N. Y. Incorporated by special act, April 14, chapter 422, Laws of 1865. Amendatory act passed May 22d, chapter 555, Laws of 1874. Boys' branch situated at Sulphur Springs, four miles from Buffalo. Girls' branch, 280 Hickory street.—A home for the care of orphans of both sexes, without conditions, except they shall be mentally and physically sound and healthy. Capacity for 150. Average number of inmates, seventy-five. Controlled by a board of directors. Supported by voluntary contributions and donations. Rev. J. Biezing, president, 270 Hickory street, Buffalo, to whom apply for admission.

German Roman Catholic Orphan Asylum. Incorporated in 1874, under the general statute. Opened in August, 1874. No. 530 Best street.—To provide for, support and educate German Roman Catholic orphan and destitute children of both sexes. Capacity for 250. Average number of orphans, 150. Controlled by a board of trustees. Supported by

BUFFALO — (Continued).

voluntary contributions, etc. Rev. F. Keitz, president; George Baldus, vice-president; Jacob J. Lang, recording secretary; Anthony Neupert, financial secretary and treasurer, 464 Main street, all of Buffalo. In charge of the Sisters of St. Francis, to whom apply at any time at the asylum.

Orphanage of "The Charity Foundation of the Protestant-Episcopal Church in the City of Buffalo," which see under class V, division 3.

St. Joseph's Orphan Asylum of "The Society for the Protection of Destitute Catholic Children" (West Seneca P. O.), which see in this division.

St. Mary's Asylum for Widows, Foundlings and Orphans. See Buffalo Widows' Asylum, in this division.

St. Vincent's Female Orphan Asylum. Incorporated February 3, 1849, under the general statute. Opened in 1848. No. 1313 Main street, corner of Riley street.—For benevolent, charitable and scientific purposes, and to serve as an asylum for destitute orphans, and for young females, also for destitute and homeless children. Conditions of admission are, death of parents, inability of surviving parent to support and educate the child, and even when both parents are living, and the child is exposed, or totally neglected. Those who are of a vicious character, and have any incurable or contagious disease, are not received. Capacity for 130. Average number of inmates, 129. Controlled by twelve Sisters of Charity. Sister Emily Jordan, president, all residing at 1313 Main street. Supported by counties, charitable contributions, and by such amounts as poor parents, or relatives are able to pay. Apply personally or in writing at any time to the sister in charge of the asylum.

Society for the Protection of Destitute Catholic Children. Incorporated by special act April 25th, chapter 364, Laws of 1864, amendatory act passed May 26, 1886. The institution was opened in 1886 at West Seneca, six miles from Main street, Buffalo.—For the protection of destitute and homeless Roman Catholic children, and for the correction of truant and

BUFFALO — (Continued).

wayward children and to instruct the inmates in useful trades. "St. Joseph's Orphan Asylum" is intended only for orphan boys, and incorrigible and reformatory cases are excluded. The boys are adopted or indentured into good families in the country. Capacity for 170. Average number of inmates, 165. Under the care of the Sisters of St. Joseph. The "St. John's Protectory" is also under the control of this Society, and the inmates are received on the commitment of magistrates, the warrant of the poor authorities, and the application of parents and guardians, and are taught various industries. Capacity for 150. Average number of inmates, 100. Under the charge of the Brothers of the Holy Infancy and the Sisters of St. Joseph. The society is controlled by a board of officers and managers and by the sisters. Supported by appropriations from counties and by charitable contributions. Rt. Rev. S. V. Ryan, president; Rev. Nelson H. Baker, superintendent, to whom apply at any time in person or by mail to West Seneca post-office.

CANAAN FOUR CORNERS, COLUMBIA COUNTY — BURNHAM INDUSTRIAL FARM.—General office, No. 135 East Fifteenth street, which see under New York Reformatories for Children, class VIII, division 6.

CANANDAIGUA — ONTARIO COUNTY.—Ontario Orphan Asylum. Incorporated July 22, 1863. Opened 1862, Upper Main street, near North Road.—To provide for orphan and destitute children of Ontario county and for those of other counties, when there is room in the institution. Imbeciles, epileptics and children afflicted with contagious diseases are not received. Capacity for ninety to 100. Average number of inmates, seventy-five. Controlled by a board of twenty-four lady managers. Supported largely by private donations, with interest from investments. Mrs. C. B. Cook, president; directresses, Mrs. Charles S. Hoyt, Mrs. D. F. Alverson, Mrs. A. M. Stone, Mrs. F. H. Hamlin; Mrs. William Gorham, corresponding secre-

CANANDAIGUA — (Continued).

tary; Mrs. Charles S. Hoyt, recording secretary; Mrs. Henry Field, treasurer; all of Canandaigua. Apply to the chairman of the children's committee.

St. Mary's Orphan Asylum. Capacity for fifteen. Under the care of the Sisters of St. Joseph. Taken from the Catholic directory, as no information has been received.

COLLEGE POINT — QUEENS COUNTY.— Berachah Orphanage, which see under New York Homes, in this division.

Bethlehem Orphan and Half-Orphan Asylum, which see under New York Homes, in this division.

St. Fidelis' Asylum, branch of the Orphan Home of the Roman Catholic Church of the Most Holy Trinity, which see under Brooklyn Homes, in this division.

COOPERSTOWN — OTSEGO COUNTY.— Orphan House of the Holy Saviour. A home and industrial school for orphans, half-orphans and destitute children. Incorporated by special act, chapter 165, Laws of 1870; amendatory act, chapter 340, Laws of 1891. Opened September, 1871.— To give a wholesome, moral, religious and industrial education to boys and girls in need of care; orphans, half-orphans and destitute children, of sound mind and free from contagious diseases, are received; preference being given to children of the diocese of Albany. Capacity for 100. Average number of inmates, ninety-six. One hundred and forty-six beneficiaries last year. Controlled by a board of eleven trustees. Supported by payments for board of children and contributions from the Protestant Episcopal churches, in the diocese of Albany. Rev. Charles S. Olmsted, Secretary, Cooperstown; Leslie Pell Clarke, Springfield Centre; Susan Fenimore Cooper, superintendent, to whom apply at any time.

CORNING — STEUBEN COUNTY.— St. Joseph's Orphan Asylum. No information has been received from this institution.

DOBB'S FERRY — WESTCHESTER COUNTY.—St. Christopher's Home, which see under New York Homes, in this division.

DUNKIRK — CHAUTAUQUA COUNTY.—St. Mary's Orphan Asylum and School. Incorporated January 25, 1858, under the general statute and the amendments thereto. Opened January, 1858.—For benevolent and charitable purposes and to sustain an orphan asylum and school for orphan, half-orphan and homeless, destitute children of both sexes, from 2 to 16 years of age, residents of the county. They are afterwards returned to parents or suitable employment is found for them in private families. Capacity for fifty. Average number of inmates, forty. Controlled by a board of officers of the Sisters of St. Joseph. Supported by appropriations from city and county, by parents and by voluntary contributions. Sister M. Anastatia Donovan, president and superintendent; Sister M. Catherine Maloney, secretary and treasurer. Apply to the superintendent or to any officer of the asylum.

ELMIRA — CHEMUNG COUNTY.—Southern Tier Orphans' Home. Incorporated February 14, 1868, under the general statute. Opened first by the "Elmira Relief Association," in October, 1864. Present building opened June, 1877. Corner of Fulton and Franklin streets.—To furnish a home with common school education and training in household work for destitute orphans, half-orphans and other needy and friendless children of both sexes sent by overseers of the poor and poormasters. They are afterwards adopted into good families or returned to parents or to the poor authorities. Children afflicted with contagious diseases, and those hopelessly vicious and criminal are not received. Capacity for 120. Average number for the year, 123. Controlled by a board of trustees and by committees representing each Evangelical church in Elmira. Supported by voluntary contributions, and an annuity of \$120 per year board from half-orphans, and receipts from the county for dependent poor children. Mrs. C. A.

ELMIRA — (Continued).

Hall, president; Mrs. D. O. Rice, first vice-president; Mrs. A. S. Diven, second vice-president; Mrs. W. W. Fish, third vice-president; Mrs. L. A. Armitage, recording secretary; Miss F. B. Meade, corresponding secretary; J. C. Greaves, treasurer. Apply to the president of the board of trustees.

FLATBUSH — KINGS COUNTY.—Babies' Ward in the Kings County Almshouse for the Care of Infants and Foundlings.

GREENBUSH — RENSSELAER COUNTY.—St. John's Orphan Asylum of Greenbush. Incorporated July 26, 1884, under the general statute.—To take care of and educate orphan, and half-orphan children and to maintain an orphan asylum and school at Greenbush, Rensselaer county, N. Y., and the inmates thereof, entrusted or committed by the overseers and county superintendent of the poor. Capacity for 150. Supported by per capita allowance for children committed. Controlled by six trustees of the Sisters of Mercy, to whom apply at the asylum.

GREEN RIDGE — RICHMOND COUNTY.—St. Michael's Home. Incorporated by special act, chapter 446, Laws of 1888. Opened September 29, 1884. Branch home and house of reception, No. 383 Ninth avenue, New York city.—To provide a home for destitute and homeless children of New York city, living at the time of committal in the district bounded by Eighth avenue and the Hudson river, between Twenty-eighth and Thirty-eighth streets, and to furnish them with a common school education. None are received who are suffering from any contagious diseases. Capacity for sixty. Average number of inmates, fifty-six. Controlled by a board of officers and by the Order of the Presentation Nuns, under whose care is the home. Supported partly by an appropriation from New York city funds, and by the Church of St. Michael. Most Rev. M. A. Corrigan, president, 402 Madison avenue; Rev. John A. Gleason, vice-president, 383 Ninth avenue; Michael Tobin, 351 West Thirty-second street;

GREEN RIDGE — (Continued).

James McDonald, 446 West Thirty-third street, officers, all of New York; Mother Mary Teresa Superior. Apply for admission to any magistrate or justice of the peace, or through the "Society for the Prevention of Cruelty to Children."

HUDSON — COLUMBIA COUNTY.—Hudson Orphan and Relief Association. Incorporated by special act, April 21, 1846. Amendatory act, chapter 159, Laws of 1855. The institution was opened in 1844. State street.—Provides a home for protecting, relieving and educating orphan and indigent children of both sexes over 2 years of age, residents of Columbia county. They are placed in families, where after a satisfactory trial, they are indentured. Idiots, epileptics, paralytics, diseased, deformed or defective cases are not received. Capacity for eighty. Average number of inmates, sixty. Controlled by a board of trustees and managers. Supported by interest on investments and amount received from the county for partial support of those children taken from the county under the act passed in 1873. C. P. Collier, president; Allen G. Hudson; vice-president, ———; L. G. Guernsey, secretary and treasurer, 435 Warren street. Apply to any officer or manager of the institution.

Volunteer Firemen's Home Association of the State of New York (The). (See class V, division 3.)

ITHACA — TOMPKINS COUNTY.—Ladies' Union Benevolent Society. Incorporated December 13, 1890. For the dispensation of benevolence to orphans and other persons in need of the same. Controlled by a board of fifteen trustees. No information has been received.

JAMAICA — QUEENS COUNTY.—Orphan Home, of the Roman Catholic Church of the Most Holy Trinity, branch of, which see under Brooklyn Homes, in this division.

JAMESTOWN — CHAUTAUQUA COUNTY.—Gustavus Adolphus Orphans' Home of the New York Conference of the

JAMESTOWN — (Continued).

Scandinavian Lutheran Augustana Synod. Incorporated August 29, 1883, under the general statute.—To establish and maintain at Jamestown, in the county of Chautauqua, in the State of New York, a home for orphan, friendless, destitute or unprotected children, and to receive and take charge of such children under 18 years of age, as may be voluntarily intrusted to them by their parents or guardians or committed to their charge by competent authority, and to provide for their support and afford them the means of religious, moral, intellectual and industrial education. Controlled by a board of trustees. Apply to the superintendent at the home.

KING'S PARK — SUFFOLK COUNTY (St. Johnland).—Babies' Shelter of the Holy Communion. (See under New York Homes for children in this division.)

Society or St. Johnland here maintains its home. (See under New York Homes for Children, in this division.)

KINGSTON — ULSTER COUNTY.—Industrial Home of the City of Kingston. Incorporated by special act. Opened in March, 1877, on Union avenue.—For the benevolent, charitable and religious care of children received from the city and county, irrespective of creed, color or nationality, and for the care of a limited number of old ladies from the city only. Boys over 10 years old are excluded. Capacity for fifty. Average number of inmates, forty. Controlled by a board of managers and a board of seven trustees. Supported by appropriations from the city and county for children committed, and by subscriptions. Miss M. I. Forsyth, president; Mrs. Edward Tompkins, first vice-president; Mrs. Thomas Cornell, second vice-president; Mrs. Wm. B. Fitch, secretary; F. A. Waters, treasurer, all of Kingston. Apply to the executive committee of the board of managers, Monday afternoons, at the home, or in a special case, to any of the managers.

LOCKPORT — NIAGARA COUNTY.—Lockport Home for the Friendless. Incorporated February 8, 1871, under the general statute. Opened March, 1871, 387 High street.—To receive, care for and place in homes poor and indigent children of Niagara county. Capacity for forty-five. Average number of inmates, forty. Controlled by a board of trustees. Supported by funds received from the board of supervisors for county children and by voluntary contributions. John Hodge, president; Joseph A. Ward, secretary and treasurer. Apply to Mrs. J. T. Bellap and Mrs. C. L. Hoag, the directresses, on Wednesday of each week.

MINEOLA — QUEENS COUNTY.—Temporary Home for Children of Queens County, New York. Incorporated May 26, 1885, under the general statute. Opened in 1885.—To provide a temporary home for destitute children, and for such as may be committed to its care by the county superintendents and town overseers of the poor of Queens county. Children shall be admitted to "The Home" upon the written order of any member of the board of managers, and no child committed to its care shall be withdrawn except by a written order from one or more superintendents of the poor, indorsed by the executive committee. They shall be educated, taught the principles of the Christian religion and habits of usefulness; no sectarian peculiarities shall be inculcated; at a suitable age they shall severally be placed out to some respectable person, according to law, and also those children whose parents or guardians, by a written agreement, have voluntarily surrendered or intrusted them to the association, shall be placed in good homes, or at such trades or occupations as may be thought most advisable, and all children shall be under the supervision of the executive committee or board of managers. Capacity and average number of inmates, sixty. Controlled by a board of managers. Supported by the county appropriation, dues of members and by voluntary contributions. Mrs. Isaac L. Moe, president, Corona, L. I.; Mrs. C. I. Stewart, secretary, Jamaica, L. I.; Mrs. James R. Willetts, treasurer, Roslyn, L. I. Apply to the executive committee.

MT. LORETTO — RICHMOND COUNTY (S. I.).—Mission of the Immaculate Virgin for the Protection of Homeless and Destitute Children (Branch of the New York Parent Institution, in this division.)

MT. VERNON — WESTCHESTER COUNTY.—New York Infant Asylum. Branch of institution at Sixty-first street and Amsterdam avenue. (See under New York City Homes, in this division.)

Wartburg Orphans' Farm School of the Evangelical Lutheran Church. (See under New York Homes, in this division.)

NANUET — ROCKLAND COUNTY.—St. Agatha's Home for Children. (See under New York Homes, in this division.)

NEWBURGH — ORANGE COUNTY.—Children's Home, city and town of Newburgh. Branch of the Newburgh Alms-house. Opened August 20, 1877. No. 68 High street.—Part of the system of the commissioners to relieve the worthy outdoor poor, by taking care of one child or more, on condition that the parent or parents, by their own industry, support the balance of the family. Capacity for sixty. Average number of inmates, thirty-one. Controlled by the board of commissioners and superintendent of the poor. Supported by the city tax. James J. Dougherty, president of the board, to whom apply, or to Chauncey F. Gardner, superintendent, at the Alms-house.

Newburgh Home for the Friendless. Incorporated by special act, April 7, chapter 146, Laws of 1862. Opened October, 1861. No. 165 Montgomery street.—The object and business of the corporation named in the charter shall be: "By the publication and diffusion of books, papers and tracts, and by other moral and religious means, to prevent vice and moral degradation, and maintain houses of industry and homes for the relief of friendless, destitute or unprotected females, and for friendless and unprotected children." The objects of this society shall be "to promote the cause of virtue and humanity by disseminating correct principles, and by protecting the

NEWBURGH — (Continued).

young, destitute and friendless from the wrong, suffering and moral ruin incident to their condition. Also, to secure for homeless or neglected children needful mental, moral and religious instructions, and, so far as practicable, the training of the Christian family." Friendless and destitute girls under 14, and boys under 10 years of age, either orphans or those abandoned by their parents, may be received and provided for until permanent homes in Christian families can be secured for them by adoption or otherwise. Children must be free from contagious diseases, or any physical disability that might cause trouble, and must be residents of Newburgh or vicinity. A compensation is required for the support of those whose parents or guardians reside outside of the city of Newburgh, as long as no aid is received from the State. Capacity for forty-five. Average number of inmates, forty. Controlled by a board of managers, representing the different religious denominations of the city. Supported by voluntary contributions and by interest of endowment. Mrs. Charles F. Allan, first directress, 195 Montgomery street; Mrs. Charles J. Howell, second directress, 156 Montgomery street; Mrs. Grant E. Edgar, third directress, 71 Ann street; Mrs. J. G. D. Findley, recording secretary, 48 Dubois street; Mrs. (Rev.) S. Carlisle, corresponding secretary, 284 Liberty street; Mrs. Charles Caldwell, treasurer, 27 Montgomery street. Apply to the house family committee, at the home, every Tuesday, at 11 a. m.

NEW YORK CITY.—Asylum of St. Vincent de Paul. Incorporated November 6, 1868, under the general statute. Opened first as a private institution in 1858. No. 215 West Thirty-ninth street.—For the reception and education, both secular and religious, without charge, of destitute and unprotected orphans, half-orphans and friendless children, of both sexes from 4 years and upward, preferably of French birth or parentage, and the gratuitous education of the children of indigent parents. Capacity for 254. Average number of inmates 240. Con-

NEW YORK CITY — (Continued).

trolled by a board of trustees. Supported by voluntary contributions and an appropriation from the city. Under the charge of the Sisters Marianites of the Holy Cross. Rev. Gaston Septier, president; Charles E. L. Barbier, secretary; Henry Amy, treasurer, 31 Nassau street. Apply to the president of the board of trustees through the Mother Superior at the asylum.

Asylum of the Sisters of St. Dominic. Incorporated in 1890 under the general statute. House of Reception, Nos. 137 to 143 Second street. Asylum and Industrial School are at Blauveltville, Rockland county.—To maintain a home for destitute, homeless and unprotected children, as well as for such children as may be committed by a magistrate; to provide for their support and moral and material welfare. Controlled by and in charge of the Sisters of St. Dominic. Supported by voluntary contributions and by public funds. Apply to any police justice, or to the sisters at the convent, No. 137 Second street, at any time. (Copied from the "New York Charities Directory," as no reply has been received.)

Babies' Shelter of the Church of the Holy Communion. Incorporated May 2, 1881, under the general statute. Opened 1873. Now at St. Johnland, King's Park, Suffolk county. Formerly of No. 118 West Twenty-first street.—A permanent home for healthy children, between 1 and 7 years of age, whose parents are too poor, sick or overworked to care for them. Capacity for twenty-five children. About thirty were cared for last year. Controlled by an executive committee and a board of trustees. Mrs. H. L. Roosevelt, president, 62 East Thirty-fourth street; L. L. Delafield, secretary; Wm. T. Innes, treasurer, 31 West Tenth street; Mrs. Clarence R. Conger, Rev. Henry Mottet, Mrs. Wm. O. McDonald and Miss Chamberlain, trustees. Apply to Sister Eliza at the Sisters' House, No. 228 Sixth avenue, or to any of the officers or trustees.

Berachah Orphanage. Incorporated March 5, 1887, under the general statute. Opened September, 1886. Thirteenth street, near First avenue, College Point, Queens county (L. I.), under

NEW YORK CITY — (Continued).

the auspices of the Gospel Tabernacle of New York.—To receive boys from 2 to 10 years of age and girls from 2 to 14 years of age, who are either orphans, half-orphans, or destitute, who are members or the children of members of the Gospel Tabernacle and residents of New York city; to give them secular, industrial and manual training and to care for their physical, mental, moral and spiritual welfare. Complete surrender of children is required until they are of age. Capacity for forty. Average number of inmates, thirty-six. Controlled by a board of trustees. Supported by voluntary contributions. Rev. A. B. Simpson, president; R. A. E. Funk, secretary; O. S. Schultz, treasurer; Mrs. O. S. Schultz, superintendent; all of 690 Eighth avenue, New York city. Apply by letter at any time to the superintendent at 690 Eighth avenue, or in person, Tuesdays, from 2 to 4 p. m.

Bethlehem Orphan and Half-Orphan Asylum. Incorporated November 21, 1888, under the general statute. Second avenue, between Third and Fourth streets, College Point, Queens county, L. I.—For the relief, maintenance, care and education of orphan and half-orphan children of sound mind and body, from 3 to 14 years of age; the establishment and maintenance of industrial schools in connection therewith and to instruct and teach them in religion according to the doctrines of the Evangelical Lutheran Church. Capacity for eighty-five. Average number of inmates, eighty-three. A moderate charge is made for board, when a relative or guardian is able to pay. Under the control of thirteen Lutheran congregations of New York city and vicinity, and of a house committee. Supported by voluntary and annual subscriptions of the members of the Lutheran churches and of other friends. Rev. E. Bohm, president, 341 East Eighteenth street, New York city; J. P. Hauschild, vice-president, 18 Franklin street, New York city; J. Behn, secretary, 182 Tompkins avenue, Brooklyn; C. F. Gennerisch, treasurer, 49 Harrison street, New York city. Apply with a recommendation to the president or to any member of the board at any time.

NEW YORK CITY — (Continued).

Burnham Industrial Farm. Located at Canaan Four Corners, Columbia county. (See under New York, class VIII, division 6.)

Children's Aid Society (The). United Charities Building, Fourth avenue and Twenty-second street.—Provides permanent homes for children in the country and out in the west. (See class III, division 3.)

Childrens' Fold (The). Incorporated April 7, 1871. Amenda-tory act, chapter 566, Laws of 1874. Opened in 1869. Boys' building, Eighth avenue and Ninety-second street; girls' building, One Hundred and Fifty-fifth street, between St. Nicholas and Amsterdam (Tenth) avenues.—Receives and adopts into families in the country destitute and homeless children over 4 and under 10 years of age, especially those recommended by the clergy of the Protestant Episcopal Church. Children afflicted with contagious diseases and those of vicious habits are not admitted. Capacity for 170. Average number of inmates, 155. Last year 236 children were cared for. Controlled by a board of trustees. Supported by voluntary contributions and appropriations from the city. Rev. T. M. Peters, D. D., president, 225 West Ninety-ninth street; Wm. Harold Brown, secretary, 127 West Forty-third street; James Pott, treasurer, 14 Astor place; Miss Emily Butler, superintendent in charge of the fold and house-mother of the boys' home; Mrs. Harris, house-mother of the girls' home. Apply any week day at the office, Ninety-second street and eighth avenue, from 9 to 11 a. m., or to any Protestant Episcopal clergyman.

Colored Orphan Asylum and Association for the Benefit of Colored Children in the City of New York. Incorporated by special act in 1838. Opened in June, 1837. West One Hundred and Forty-third street and Boulevard.—Receives colored orphans of both sexes, free from chronic or contagious diseases, between 2 and 10 years of age, and cares for them gratuitously, except those intrusted to the institution by a parent or guardian, who must pay seventy-five cents per week

NEW YORK CITY — (Continued).

for each child, with the privilege of withdrawing them at the age of 12 years. Half-orphans also received when the surviving parent is unable to provide for the family. All children are instructed and trained in home industries, and afterwards indentured into families or to trades. Destitute children should be committed by the police justices of the city. Capacity for 310 inmates. Average number, 300. Controlled by a board of directors. Supported by public funds and contributions. Visiting days, Mondays and Fridays from 10 a. m. to 4 p. m. Mrs. Augustus F. Taber, first directress; Mrs. Wm. H. Onderdonk, second directress; Miss E. T. Wall, secretary; Mrs. S. B. Van Dusen, treasurer; Martin K. Sherwin, superintendent, to whom apply any week-day from 9 a. m. to 4 p. m.

Dominican Convent of Our Lady of the Rosary. Incorporated August 11, 1880, under the general statute. The Dominican Convent was opened May, 1876, at 329 East Sixty-third street; Branch home, St. Agnes' Convent, Sparkill, Rockland county. Incorporated for religious, charitable, educational and reformatory purposes.—To care for and educate destitute female children from 2 and a half to 14 years of age, free from contagious or infectious diseases, committed by a magistrate or otherwise. Capacity of both convents, 760. Average number of inmates, 629. Controlled by the Dominican Sisters of Our Lady of the Rosary. Supported by the city appropriations for committed children, and by voluntary contributions for non-committed children. Mother Mary Dominic, president and treasurer; Sister Mary Lignori, secretary. Apply to the superioress at the Dominican convent, 329 East Sixty-third street, at any time.

Eighth Ward Mission. ————— Organized in 1877, No. 49 Macdougall street. Maintains a home and provides for and educates orphan boys who are too old to be retained in institutions, and who are unable to support themselves. Capacity for fourteen. Maintains also an industrial school for poor girls from 8 to 15 years of age, open every Saturday from

NEW YORK CITY — (Continued).

October to May, inclusive, from 2 to 4 p. m. Over seventy-five in attendance. The garments made by the children are distributed among them. In addition, the poor families of the neighborhood are visited and assisted in cases of necessity. Controlled by an advisory committee and by Mrs. Mary L. Proudfoot, superintendent. Supported by voluntary contributions. The advisory committee is as follows: Rev. J. R. Davenport, D. D., Rev. D. Parker Morgan, D. D., W. Bayard Cutting, R. Fulton Cutting, Stephen Hickson and James Pott, treasurer. Apply to the superintendent at the mission at any time.

German Masonic Home of the German Masonic Temple Association, of the city of New York. Situated at Tappan, Rockland county. (See class V, division 3.)

German Odd Fellows' Home Association of New York, orphanage at Unionport, Van Nest station, Westchester county. (See class V, division 3.)

Hebrew Benevolent and Orphan Asylum Society of the city of New York. Incorporated as "The Hebrew Benevolent Society of the city of New York" by special act, February 2, 1832. Amendatory act passed April 12, 1860. Reincorporated February 18, 1870, whereby the name was changed to present title. Other amendatory acts passed April twelfth, chapter 230, Laws of 1874, and December 31, 1874. The orphan asylum was opened in April, 1860. Amsterdam avenue, between One Hundred and Thirty-sixth and One Hundred and Thirty-eighth streets. The society is a constituent of the United Hebrew Charities, which administers to the worthy Jewish poor and needy the appropriation of \$25,000, made by this society's committee on charity and relief. The asylum is for the support, education and industrial training of Hebrew orphans, half orphans, or indigent children of both sexes, not exceeding 13 years of age, who in case of complete surrender by guardians, are at a suitable age bound to learn some useful trade. Capacity of asylum, 800. Average number of inmates, 570. Controlled by a board of governors. Supported by city funds.

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and voluntary contributions. Jesse Seligman, president; Henry Rice, vice-president; Myer Stern, secretary; Abraham Wolff, treasurer; Rev. Dr. Herman Baer, superintendent. Guardians of orphans, etc., must apply for admission to the board of governors at the asylum. Applicants for relief must apply to the committee on charity and relief at the office of the United Hebrew Charities, 132 Second avenue, daily, except Saturday and Sunday.

Hebrew Sheltering Guardian Society of New York (Orphan Asylum). Grand Boulevard and One Hundred and Fifty-first street. (See class VIII, division 6.)

House of St. Giles the Cripple. No. 193 State street, Brooklyn. (See under Brooklyn's Hospitals, class VII, division 4.)

House of the Holy Comforter Free Church Home for Incurables. No. 149 Second avenue. (See class VII, division 2.)

Institution of Mercy. Incorporated February 11, 1854, under the general statute. Opened June, 1846. No. 1075 Madison avenue. Branch home for boys, at Pelham Bay park, Westchester county; also St. Joseph's Industrial Home for Destitute Children attached to the Institution of Mercy.—To establish, maintain and conduct a house of protection in which young women of good character may be protected and supported until situations may be provided for them; to visit the poor and to support them gratuitously with nourishment, clothing and other necessities in their own homes; to give poor girls useful and proper instruction without charge. The House of Mercy (not to be confounded with the Protestant-Episcopal "House of Mercy" for Fallen Women) and St. Joseph's Industrial Home for Destitute Children and St. Joseph's Branch Home are for the care and instruction of children committed by the police justices and the protection of women and young girls of good character. St. Joseph's Infirmary at Eighty-second street and Park avenue receives the sick inmates of the House of Mercy and the adjoining school. The Sisters of Mercy also visit and relieve the worthy sick and dying poor in their own homes, the inmates of the city and State prisons, hospitals

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and various institutions on the islands. For the worthy poor, irrespective of creed or nationality. Capacity of the New York homes, 740; of the branch home, 261. Average number of inmates in all homes, 850. Over 10,000 persons were relieved, visited or instructed during last year. Controlled by a board of trustees. Supported by voluntary contributions and by moneys received from the excise fund for support of committed children. In charge of the Sisters of Mercy, to whom apply at the mother house, 1075 Madison avenue, at any time.

Ladies' Deborah Nursery and Child's Protectory in the City of New York (The). Incorporated in 1887, under the general statute. Opened in 1878. Headquarters, No. 95 East Broadway; branches, male department, No. 103 East Broadway, and 87 Henry street; female department, Eagle avenue and One Hundred and Sixty-first street.—For the care, support, maintenance, protection and education of poor, pauper and delinquent children of the Jewish faith, from 2 to 14 years of age, committed by legal authority, who are instructed in trades and household duties till able to support themselves. Food and shelter are also given to such other children as the society may deem proper. Former inmates are cared for when out of employment. Capacity for 450 to 475. Average number of inmates, 410. Cripples and children having contagious diseases are excluded. Controlled by a board of directors and officers. Supported by voluntary contributions and by appropriations from the excise fund. Morris Alexander, president, 97 East Broadway; M. J. Litchenberg, honorary secretary and treasurer, 158 East Sixty-second street; M. S. Davis, superintendent of male department; Joshua Kantrowitz, clerk, 123 Second avenue. Apply to the chairman of the committee on applications and discharges, which meets every Monday at 8 p. m., at 95 East Broadway, or to the superintendent daily from 10 a. m. to 4 p. m.

Leake and Watts Orphan House in the City of New York. Incorporated in 1831 by special act. Opened November, 1843. Situated on the northern boundary line of New York city;

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reached by the Hudson River railroad at the Ludlow station, or by the New York and Northern railroad at the Lowerre station. Formely at One Hundred and Tenth street and Morningside park, New York city.—A free home for well-behaved, full orphans of respectable parentage in destitute circumstances, physically and mentally sound, between the ages of 3 and 12, who are intrusted to the care of the trustees until they are 15 years of age. If not claimed by relatives or guardians at that age, they are indentured to trades or service under the laws of the State of New York. The institution is unsectarian and orphans of any nationality are received. Disorderly or ungovernable children are not admitted. Capacity for 200. Controlled by a board of trustees. Supported by the interest on endowment fund and by a small amount from the public school fund. Rev. Morgan Dix, D. D., president, 29 Vesey street; John M. Knox, treasurer, 145 Broadway; John M. Knox, Jr., clerk, 145 Broadway; George R. Brown, superintendent of the house, P. O. Yonkers, to whom apply or to the president at any time.

Messiah Home for Little Children. Incorporated by special act May seventeenth, chapter 446, 1889. Opened in February, 1885. No. 4 Rutherford place, near East Sixteenth street.—Provides a home for children of working mothers, for orphans and destitute children over 2 years and under 10 years of age, and an emergency shelter for those temporarily in need on account of the sickness of their parents, or similar exigencies, and educates those committed permanently to the home to become self-supporting. Board is charged in proportion to wages received by parents. Home life is made the special feature. Capacity for thirty-five. Average number of inmates, thirty-three. Controlled by a board of managers. Supported by subscriptions and voluntary contributions. Mrs. W. A. Pullman, president, Buckingham Hotel; Mrs. E. L. Alexander, first vice-president, 33 East Twenty-first street; Mrs. J. Wells Champney, second vice-president, 96 Fifth avenue; Mrs. G. L. Mason, secretary, 34 West Thirty-sixth street;

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Miss Helena Flint, treasurer, 109 East Thirty-ninth street. Apply to the committee on admission, Tuesdays from 10 to 11 a. m., at the home.

Mission of the Immaculate Virgin for the Protection of Homeless and Destitute Children. Incorporated May 13, 1877, under the general statute. Northeast corner of Lafayette place and Great Jones street. Branch home, "Mt. Loretto," Pleasant Plains, Richmond county (S. I.).—To provide for the support and protection of homeless and destitute children of the city of New York. Provides both a temporary and a permanent home for destitute boys not over 16 years of age, without distinction, giving them a secular, manual and religious education and teaching them habits of industry and self-reliance. Gives meals and lodgings at two dollars a week to newsboys, bootblacks and other working boys able to pay; until they can better their conditions; also furnishes, in extreme cases, free meals and lodgings to destitute boys and some times clothing. The mission home at Lafayette place is more of a temporary character, and has an employment bureau for young men and boys, with capacity for about 290, while the home at Mt. Loretto was recently erected and furnished as the permanent home and training school of the mission. Accommodates over 1,000 boys and 156 girls. The St. Vincent's relief department visits the adult poor and sick of the city and relieves them in their homes, and gives meals to such at the mission. Supported by public funds and by voluntary contributions. Rev. James J. Dougherty, director, pastor and treasurer, to whom apply at any time at No. 2 Lafayette place.

Missionary Sisters of the Third Order of Saint Francis. Incorporated August 24, 1870, under the general statute. Amendatory act, chapter 633, Laws of 1886. Maintains the "St. Joseph's Home for Destitute Children." Opened June 1, 1879, at Peekskill, Westchester county. House of Reception, No. 143 West Thirty-first street.—To instruct the ignorant, particularly the poor; to tend the sick; to visit hospitals and pris-

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ons when called upon to do so; to shelter, guide and instruct destitute orphans, and to do kindred offices of charity and benevolence as occasion may require. Destitute and orphan children of both sexes are received upon commitment from New York city and Westchester county. Girls are admitted at 2 years, and remain until 14 years of age; boys from 2 years until 10 years of age, but, when advisable, the term is extended. Criminal and vicious children are excluded. Capacity for 1,150. Average number of inmates, 1,032. Controlled by a board of trustees. Supported by appropriations from New York city and Westchester county, and by voluntary contributions, etc. Rev. James Fitzsimmons, president; Sister M. Margaret, secretary; Sister M. Elizabeth, treasurer, all of Peekskill. Apply to the police justices of New York city and to the superintendent of the poor of Westchester county, or to the Sister Superior at the house of reception.

New York Catholic Protectory. Houses of Reception, Nos. 415 and 417 Broome street. Asylums are situated at Westchester county. (See class VIII, division 6.)

New York Foundling Hospital, formerly "The Foundling Asylum of the Sisters of Charity in the City of New York." The title was changed by special order of the Supreme Court, June, 1891. Incorporated October 9, 1869, under the general statute; amendatory acts, chapter 335, Laws of 1872; chapter 644, Laws of 1874; chapter 43, Laws of 1877. Opened in October, 1869. No. 175 East Sixty-eighth street, between Third and Lexington avenues. Branch, "Nazareth," at Spuyten Duyvil on the Hudson.--To care for foundlings, abandoned or destitute children and needy and homeless mothers of New York city. Maintains also a Children's Hospital for the sick of the asylum; "St. Ann's Maternity Hospital," at 130 East Sixty-ninth street, and "St. John's Day Nursery and Kindergarten," at 233 East Sixty-seventh street. Capacity for 900 children, which is extended by means of the nurses of the outdoor department to 1,900. One thousand nine hundred and seventy-seven

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inmates were in the hospital last year; also 2,705 children under 5 years of age, 418 needy and homeless mothers, and 218 maternity cases were cared for. Four hundred and fifty-two children were adopted or homes were found for them in the country, and 398 women were returned to their homes, or provided with situations. Controlled by the Sisters of Charity. Supported by per capita allowance by the city and county of New York, by annual subscriptions and donations, and by board of mothers able to pay small sums for board. Eliza Sweeney, president; Mary Dodge, secretary; Sister Mary Irene (Catherine Fitzgibbon), treasurer and directress, to whom apply in person at any hour at the asylum.

New York Infant Asylum. Incorporated by special act, March 11th, chapter 106, Laws of 1865. Amendatory acts, chapter 263, Laws of 1872; chapter 90, Laws of 1877. The asylum is situated at Sixty-first street and Amsterdam avenue. Branch asylum at Mt. Vernon, Westchester county.—To receive and take charge of foundlings and other infant children of the age of two years and under, who may be intrusted to their charge, and to provide for their support and moral, physical, intellectual and industrial education; also to provide such lying-in wards and methods of care and guidance as shall tend to prevent the material abandonment of homeless infants and diminish the moral dangers and personal sufferings to which homeless mothers are exposed. For children of 2 years and under whose parents are dead, sick or otherwise unable to provide for them, and for those abandoned, irrespective of race, creed or color; also for the protection and care of unmarried women (not courtesans) pregnant for the first time, and unable to provide for the child, and for needy mothers and their infants. Capacity for 140 women and children; and at the Mt. Vernon branch, 135 women and 400 children. Controlled by board of management and resident officers. Supported by the city of New York and by donations. Henry Knickerbacker, president, 830 Fifth avenue; A. S. Hatch, secretary, 15 Cortland street; Mrs. Margaret E. Fenne-

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ver, matron of the asylum, city, and Mary J. Handley, matron at Mt. Vernon branch. Apply to the resident physician or to the matron at Sixty-first street and Amsterdam avenue.

New York Juvenile Asylum. Amsterdam avenue and One Hundred and Seventy-sixth street. (See class VIII, division 6.)

Nursery and Childs' Hospital. No. 571 Lexington avenue, corner of Fifty-first street. (See class VII, division 4.)

Order of Brothers of Nazareth. (See under Verbank, Dutchess county, class VII, division 2.)

Orphan Asylum Society in the City of New York. Incorporated by special act, June 3, 1807. Institution opened in 1807. Amendatory acts, chapter 19, Laws of 1809; chapter 86, Laws of 1811; chapter 303, Laws of 1828; chapter 159, Laws of 1829, and an act passed April 25, 1872. The asylum is situated on West Seventy-third street, between Riverside and West End avenues.—To provide an asylum for the care, support and education of full orphans of both sexes, and of other such children as shall be considered suitable recipients of its benefits. Half-orphans are admitted as orphans whose remaining parent is unable to provide for them. Admission is free, and a total surrender is required for all, from 18 months to 18 years of age. No sick or colored children received or those suffering from contagious diseases. Capacity for 250. Average number of inmates, 182. Controlled by a board of trustees of not less than fourteen or more than twenty-five in number. Supported by subscriptions, donations, invested funds, and public school fund. Mrs. Jonathan Odell, first directress, 3 West Thirty-seventh street; Miss Pauline de F. Lentilhon, secretary, New Brighton, S. I.; Mrs. J. G. Smedberg, financial secretary, 67 West Seventy-third street; Miss Janet T. Sherman, treasurer, at the asylum; Miss E. E. Auchincloss, registrar, 11 West Fifty-seventh street; Miss Florence Saterlee, recorder, New Brighton, S. I. Apply to the executive committee, at 29 East Twenty-ninth street, every Thursday from 10 a. m. to 12 m.

Orphan Asylum Society of the Reformed Churches of Brooklyn and New York. Incorporated August 4, 1892, under the gen-

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eral statute. Office, No. 30 State street. No building has been erected as yet.—A society for the care and disposal of orphan, pauper or destitute children of members of the Reformed Church. Until an orphanage is erected, the trustees consider and take charge of each case when application is made to them. Controlled by a board of trustees. Supported by voluntary contributions and subscriptions. Rev. J. H. Oester, D. D., chairman, 248 West Fortieth street; Rev. Julius W. Geyer, president, 78 East Second street; Carl Schweikhardt, treasurer, 95 Ten Eyck street, Brooklyn; Rev. Paul Sommerlatte, secretary, to whom apply at 30 State street.

Orphanage of the Church of the Holy Trinity of the City of New York. Incorporated in October, 1889, under the general statute. No. 400 East Fiftieth street.—To care for, protect and surround with the influences of a home, orphan, destitute and friendless children. No child received under the age of 1 year, and girls only are taken, preference in all cases being given to the admission of full orphans, who must be resigned to the fostering care of the orphanage for a number of years, and at a suitable age they may be bound out in good, suitable homes or families, according to law. Capacity for eighteen children. Controlled and supported by the Church of the Holy Trinity of New York city. Mrs. J. Wadsworth, first directress, 17 East Forty-first street; Mrs. A. Smith, second directress, 109 East Seventy-second street; Mrs. C. R. Bacon, treasurer, 25 West Thirty-eighth street; Miss A. V. Smith, secretary, 903 Sixth avenue, to whom apply for admission.

Orphans' Home and Asylum of the Protestant Episcopal Church in New York (The). Incorporated June 20, 1859, under the general statute. Forty-ninth street, between Fourth and Lexington avenues. Opened in 1892.—For the maintenance and education of orphans and half-orphans, from 3 to 8 years of age. Capacity for 150. Evidence must be produced that the child is parentless in part or in whole, and that he or she is free from infectious or incurable disease; and no child

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shall be received unless the absolute control of the child can be secured to the board. The children are taught the usual elementary branches of an English education, and their religious instruction shall be in conformity with the doctrines, discipline and worship of the Protestant Episcopal church in the United States. Controlled by a board of trustees and managers, composed of ladies, representatives from the Protestant Episcopal churches in the city, with an advisory committee of gentlemen. Supported by voluntary contributions, legacies, board of children and donations. Miss Potter, first directress, 44 East Twenty-fifth street; Mrs. Edmund S. Hamilton, second directress, 7 West Twenty-fifth street; Miss Laight, secretary, 33 Park avenue; Mrs. Elisha A. Packer, treasurer, 20 West Fifty-first street. Apply for admission to the committee for receiving and dismissing children, on Fridays, at the home, from 12 m. to 2 p. m.

Roman Catholic Orphan Asylum in the City of New York. Incorporated April 13, 1852, under the general statute. Organized, 1825. Fifty-first and Fifty-second streets, between Fifth and Fourth avenues. Maintains St. Patrick's Male and Female Orphan Asylums under one management.—For the care and education of orphan and half-orphan children over 3 years and under 10 years of age. Application for admission should be made in writing to the committee on admission and binding, by the clergy of the different parishes, on or before the Saturday previous to the second and fourth Wednesdays of each month, at the asylum office, 461 Madison avenue. Capacity for 914. Average number of inmates, 850. Controlled by a board of managers. Supported by voluntary contributions and public school fund. Most Rev. M. A. Corrigan, D. D., president, 452 Madison avenue; Rt. Rev. Mgr. J. M. Farley, V. G., first vice-president; James Olwell, second vice-president; Francis Higgins, secretary, 45 Cedar street; John H. Spellman, assistant secretary, 109 Park row; John C. McCarthy, treasurer, 131 Barrow street; James J. Traynor, general agent, 461 Madison avenue. Apply as above.

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St. Agatha Home for Children. Incorporated February 4, 1885, Opened February, 1884. Home at Nanuet, Rockland county. House of reception, St. Joseph's Home, No. 209 West Fifteenth street.—For the care, maintenance and education of orphan and other children; the instruction of such children in some useful trade or business, and the training and employment of such children and others in some useful branches of manufacture. Destitute children committed by the courts or by the authorities, and free from contagious diseases, are received. Capacity for 250. Average number of inmates, 178. Controlled by a board of trustees of the Sisters of Charity. Supported by voluntary contributions and per capita allowance from the city. Eliza Sweeney, president; Mary E. Dodge, secretary, Mt. St. Vincent-on-the Hudson; Bridget Reilly, treasurer, Nanuet, N. Y. Apply to Sister Mary Carmelita, at any hour, at 209 West Fifteenth street, at which number a house is especially set apart for the children received from the "Society for Prevention of Cruelty to Children."

St. Agnes' House of "The House of Mercy, New York" (P. E.). Two Hundred and Sixth street, Inwood-on-the-Hudson. (See class VIII, division 5.)

St. Anne's Home for Destitute Children. Incorporated November 18, 1879, under the general statute. Opened January, 1880. Corner Ninetieth street and Avenue A.—To take care of, educate and provide for orphan, destitute and indigent children, of sound mind and over 1 year old, intrusted by parents or guardians or committed by the authorities, and to give them an industrial training. Capacity for 350. Average number of inmates, 260. Controlled by the Roman Catholic Sisters of the Good Shepherd. Supported by public funds, etc. Apply to the sister in charge, at any hour of the day, at the office of the home, Ninetieth street and Avenue A.

St. Benedict's Home for Colored Children. Incorporated in 1892, under the general statute. Rye, Westchester county. House of reception, No. 120 Macdougall street,

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New York city.—For the rescue, relief, care and education of destitute colored children of both sexes. Capacity for 200. Controlled by a board of trustees. Supported by voluntary contributions. Under the care of the Sisters of St. Dominic. Rev. John E. Burke, pastor, to whom apply at the house, No. 120 Macdougall street, New York. (Copied from the "New York Charities' Directory," as no reply has been received.)

St. Christopher's Home. Incorporated May 20, 1885, under the general statute. Opened April, 1881, in New York city. Now at Ingleside, Dobb's Ferry, Westchester county. Branch home still maintained at Riverside Drive and One Hundred and Eleventh street, New York city.—A home under the patronage of the Methodist Episcopal Church for the reception, care and education of Protestant orphan and destitute children, mentally and physically sound, from 2 to 10 years of age, exceptions being made occasionally to receive older and younger children; instruction is given in elementary English, industrial and domestic branches, and other useful occupations, with special reference to self-support. Children are also admitted whose parents or guardians can pay a small sum yearly towards the support of the home. All children must be legally surrendered to the home until of age. Present capacity, 100. Average number of inmates, seventy-five. Controlled by a board of twenty lady managers, with an advisory board of nine gentlemen. Supported by voluntary contributions. Mrs. J. A. Kennedy, president, 135 West Twenty-second street, New York city; Mrs. W. A. Cole, recording secretary, Yonkers; Miss W. R. Lewis, corresponding secretary, 34 Nassau street, New York city; Mrs. J. B. Cornell, treasurer, 247 Fifth avenue, New York city. Apply to the matron at the home, or to the board of managers at their meeting, the second Tuesday of each month.

St. Elizabeth's Industrial School. Incorporated January 22, 1891, under the general statute. No. 235 East Fourteenth street.—To educate girls and teach them useful trades and

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fit them to earn their livelihood; to take charge of and educate destitute children, and also to visit and succor the sick and poor in their homes and in the hospitals. Children of sound mind, committed by a magistrate or by application for cases that are deemed worthy are received. Capacity for forty. Average number, twenty-seven. Controlled by a board of trustees. Supported by city appropriation, and private donations. Mary E. Nardin, president; Anna M. Larkin, Catherine Roome, Mary Purtell, Mary Franklin, Theresa Lambert, and Anna L. Steele, trustees, to whom apply at any time at the school.

St. James' Home. Incorporated —————. Organized in 1879. No. 21 Oliver street, and 26 James street.—For homeless and destitute girls committed by the magistrates in the city of New York, who there receive industrial training till able to support themselves. Capacity for 110. There were 129 inmates last year. Controlled by and under the charge of the Sisters of Charity of St. Vincent de Paul. Supported by appropriations from the city and by voluntary contributions. Apply to the Sister Superior at the asylum at any time.—(Copied from the "New York Charities' Directory," as no reply has been received.)

St. Joseph's Home for Destitute Children at Peekskill, Westchester county. (See "The Missionary Sisters of the Third Order of St. Francis," under New York Homes in this division.)

St. Joseph's Industrial Home for Destitute Children of Institution of Mercy (which see in this division).

St. Joseph's Orphan Asylum in the City of New York. Incorporated December 21, 1859. Amendatory acts, chapter 33, Laws of 1886; chapter 378, Laws of 1859. Organized and asylum opened in 1858 at Eighty-ninth street and Avenue A. Branch asylum for boys at Throgg's Neck, Westchester, Westchester county.—To support, maintain and educate in useful knowledge and employment the poor orphan, half-orphan, homeless and neglected children, especially those of German

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origin, and to assist such poor, aged people as were or may be associates of said corporation. Children are admitted at any age and kept until able to support themselves, or until 16 years old, whether committed by the magistrate or surrendered by parents and guardians. Capacity for 600 inmates. Average number, 575. Controlled by a board of seventeen managers. Supported by collections, voluntary contributions and by appropriations from the city. In charge of the Sisters of Notre Dame. Rev. Andrew Zeigler, president, 173 East Third street; Rev. F. W. Wayrich, vice-president, 234 South Fifth avenue; Conrad Strassburger, secretary, 185 East Third street; Frank Grein, treasurer, 620 Fifth street. Apply to the committee on admission, through the secretary, on the first and third Mondays of each month, at 185 East Third street, or to the Sister Superior at the asylum.

St. Michael's Home. Green Ridge, Richmond county, S. I.— For destitute children sent from New York. House of reception, No. 383 Ninth avenue. (See under Green Ridge, Richmond county, in this division.)

St. Vincent de Paul's Industrial School. Incorporated in 1865, under the general statute. No. 346 West Forty-third street.— For girls from 14 years and upwards, who are given a religious, moral and industrial education, being taught dressmaking, embroidery and domestic economy. In charge of the Sisters of Charity of St. Vincent de Paul, to whom apply.

Salesian Sisters of the Holy Angels. Incorporated April 23, 1892, under the general statute.— The particular business and objects of such society are nursing and taking care of poor and neglected children. Controlled by a board of five trustees, to whom apply.

Sheltering Arms (The). Incorporated October 10, 1864, under the general statute. Opened in 1864. West One Hundred and Twenty-ninth street, between Amsterdam avenue and Broadway.— For the reception and care of homeless and destitute children from 5 to 12 years of age, for whom no other institutions make provision — such as the blind and deaf and dumb,

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etc. — until they are old enough to enter other institutions; crippled children, incurable, and children who are deserted or temporarily homeless, unless they are vicious or fit subjects for a reformatory. Children are received for temporary board when parents are able to pay. Whole orphans and infants are not admitted. Children are not surrendered to the institution, but are held subject to the order of parents or relatives. They attend public school and are trained to household and other useful work. Capacity for 180. Average number of inmates, 155. During the year, 254 children were cared for. Controlled by a board of trustees. Supported by voluntary contributions, interest of endowment and payment for board of children. Rev. T. M. Peters, D. D., president, 225 West Ninety-ninth street; Herman C. Von Post, secretary, 32 West Fifty-seventh street; Charles W. Maury, treasurer, 58 Exchange place; Miss S. S. Richmond, superintendent, 504 West One Hundred and Twenty-ninth street, to whom apply by letter or in person at any time.

Shepherd's Fold of the Protestant Episcopal Church in the State of New York. Incorporated March 13, 1868, under the general statute. Amendatory act passed May ninth, chapter 775, Laws of 1868. Opened in 1868. Home for boys at Ninety-second street and Eighth avenue, opposite Central Park; home for girls, West One Hundred and Fifty-fifth street, near St. Nicholas avenue, under the same management and in the same building as the "Children's Fold," which see in this division.—To receive and adopt orphan, half-orphan or other friendless children and youths of both sexes, between the ages of 12 months and 15 years; to keep, support, educate and place them out to service. No children permanently crippled or afflicted or having contagious diseases are admitted. Capacity for fifty. Average number of inmates, sixty-four. Controlled by a board of trustees. Supported by appropriations from the city, donations and by small payments for board. Rev. T. M. Peters, D. D., 225 West Ninety-ninth street; George C. Kobb, secretary, 120 Broad.

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way; Herman C. Schwab, treasurer, Bowling Green; Miss E. Butler, superintendent. Apply with reference from any Protestant Episcopal clergyman at the home as above any week-day, between 9 and 11 a. m.

Sisters of the Assumption of the Blessed Virgin Mary. (See class VII, division 8.)

Sisterhood of the Good Shepherd of the Protestant Episcopal Church, in the Diocese of New York. Incorporated in 1871 under the general statute.— A community who maintain the Sisters' House and Home and Training School for Children, opened in 1886, now at 417 and 419 West Nineteenth street.— To minister to the poor, the sick, the homeless and the outcast, and to care for little children. Little girls, having no physical or mental defect, and destitute of proper care, are received into the home and trained in various forms of usefulness; others are ministered to in their homes. Capacity for twenty. Average number cared for annually, thirty-five. The sisterhood also maintain the House of the Good Shepherd (opened in 1889) at Asbury Park, N. J., where poor women and children from the parishes in New York in which the sisters minister and labor, are received for one or two weeks during the summer. Capacity for eighty. During last year, 419 persons were benefited. The "clothing bureau" and "knitting and sewing society" of the home assist in clothing the children in the home and relieving urgent and necessitous cases outside, small payments being received for garments when practicable. Controlled by the Sisterhood. Supported by voluntary contributions. Rev. T. Gallaudet, D. D., pastor, 9 West Eighteenth street; Sister Adelia, president, 419 West Nineteenth street; Miss E. Wirner, secretary, 18 West Twelfth street; William Alex. Smith, treasurer, 412 Madison avenue. Apply to Sister Adelia at the Sisters' house, at any time.

Society for the Relief of Destitute Children of Seamen. Incorporated June twenty-seventh, chapter 296, Laws of 1851. Organized 1846. Home for Seamen's Children, at West New Brighton, Richmond county, S. I.— For the relief and protection of destitute children of seamen in the city and port of

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New York, where they receive secular and religious instruction and training in habits of industry. Children are admitted between 2 and 10 years of age, and when 13 or 14, if not claimed by friends or guardians, are placed at service in families. None are received for less than one year, and parents when so able, are expected to pay fifty cents a week for each child's board. Capacity for 130. Average number of inmates, 100. Controlled by a board of managers, assisted by a board of counselors. Supported by voluntary contributions and bequests. Mrs. N. Marsh, first directress, Clifton, S. I.; Mrs. B. C. Webster, second directress, West New Brighton, S. I.; Mrs. H. P. Sexton, recording secretary, West New Brighton, S. I.; Miss Griswold, corresponding secretary, 58 West Tenth street, New York city; Mrs. G. A. E. Irving, treasurer, 113 Water street, New York city. Apply to the committee on admission through the matron.

Society for the Relief of Half-orphan and Destitute Children in the City of New York. Incorporated by special act April twenty-seventh, chapter 292, Laws of 1837. Amendatory act passed May twenty-eighth, chapter 502, Laws of 1880. Maintains the Protestant Half-orphan Asylum, opened December, 1835. Manhattan avenue, between West One Hundred and Fourth and One Hundred and Fifth streets.—To relieve, provide for, instruct and protect half-orphan and destitute children in the city of New York. Protestant children of both sexes, between 4 and 10 years of age, who by the loss of one parent are deprived of a home and can not be properly cared for, are admitted. Parent or guardians, when able to do so, are expected to pay in advance four dollars per month for the support of the child. Capacity for 300. No child is received for less than one year. Controlled by a board of trustees and a board of lady managers. Supported by voluntary contributions, by the payments by surviving parent or guardians, and by an appropriation from the public school fund. Mrs. G. D. Phelps, first directress; Miss Emily O. Butler, second directress, 78 Park avenue; Mrs. John L. Sutherland, secretary, 17 West Thirty-seventh street; Miss Martha H. Campbell, treasurer, 4

NEW YORK CITY — (Continued).

East Sixteenth street. Apply for admission through the parent, if any, to the executive committee, every Wednesday, from 11 to 12 a. m.

Society for the Reformation of Juvenile Delinquents in the City of New York (House of Refuge). Randall's island, twelfth ward. (See class VIII, division 6.)

Society of St. Johnland. Incorporated 1870, under the general statute. Opened in 1866.—To maintain a home for aged men in destitute circumstances, especially communicants of the Protestant-Episcopal Church, recommended by the parishes to which they belong; to care for friendless children and youth, and especially cripples, by giving them a home, schooling, Christian training and some trade or occupation by which they can earn their future livelihood. No distinction as to religious faith, but residents are expected to attend as far as possible, the services of the Protestant-Episcopal Church. Boys over 11 years and persons afflicted with epilepsy, contagious or chronic diseases requiring medical care and nursing are not admitted. Orphan girls are admitted free of all charges. Payment required is as follows: One hundred and fifty dollars a year for the board and care of an old man at St. John's Inn; \$125 a year for the board, clothing and education of a child, or \$100 if the clothing be furnished by friends. Under the auspices of the Protestant-Episcopal Church. Capacity for 150. Average number of inmates in the various homes, 130. Controlled by a board of officers and trustees. Supported by payment for beneficiaries, income from endowments, and by voluntary contributions. Rev. Henry A. Mottet, president, 47 West Twentieth street; Cornelius Vanderbilt, vice-president, Fifth avenue and Fifty-fifth street; Francis S. Bangs, secretary; Edward Schell, treasurer, 644 Broadway; N. O. Halstead, superintendent. Application for admission of beneficiaries must in every instance be made to the superintendent, and a personal interview is an inflexible requirement before the

NEW YORK CITY — (Continued).

application can be finally approved. This may be accomplished by applicants presenting themselves at the office of the superintendent, in Calvary Chapel, 200 East Twenty-third street, on any Thursday, from 10 to 12 a. m.

Society of St. Martha (for the Protection and Training of Children and Young Girls). Incorporated March 14, 1883, under the general statute. Institution opened December 19, 1881, as an Industrial School and Home. No. 34 West Twenty-second street.—To give industrial training to children and young girls of good character and habits, who desire to become skilled workwomen; such children from 12 to 18 years of age, particularly those too old for an orphanage, and too ignorant or unskilled to earn their own living, are taught the rudiments of English, housework, cooking, sewing and embroidery. Absolute legal surrender is required until the child is 18 years of age, and no one is received for less than three years. Those whose parents or friends are able must pay sixty dollars yearly for their clothing. Capacity for and average number of inmates, twenty-one. Controlled by a board of trustees. Supported chiefly by the Sisters of St. Joseph of Nazareth, and by voluntary contributions. Rev. Arthur Ritchie, president, 331 West Forty-fifth street; Peter Gardner, vice-president; J. Fisher Reese, secretary; Reverend Mother Elizabeth, treasurer, to whom apply in person at any time, at 34 West Twenty-second street.

Trustees Masonic Hall and Asylum Fund. Incorporated under special act, chapter 272, Laws of 1864. Amendments, May 14, 1873; May, 1877; March 13, 1885; April 11, 1890. The asylum will be dedicated and opened for the reception of inmates early in 1893.—It shall be the object of the corporation hereby created to build and maintain a masonic hall in the city of New York for the meetings of the grand lodge or general assembly of masons; and for the accommodation of other masonic bodies or associations; and out of the funds derived from the rent or income thereof, or other sources, to build, establish and maintain an asylum or asylums, school

NEW YORK CITY — (Continued).

or schools for the free education of the children of masons, and for the relief of worthy and indigent masons, their widows and orphans. Controlled by a board of trustees. Supported by voluntary contributions from the various lodges. Alex. T. Goodwin, president, Utica; Jerome E. Morse, vice-president, Brooklyn; George Hayes, secretary, New York city; John Stewart, treasurer, New York city. Apply to the trustees at the Masonic Hall, corner of Sixth avenue and Twenty-third street.

Wartburg Orphans' Farm School of the Evangelical Lutheran Church. Incorporated 1866. Reincorporated April 10, chapter 161, Laws of 1884. Amendatory act, chapter 440, Laws of 1875. Opened May, 1866. Mt. Vernon, Westchester county.—For the relief, maintenance and care of orphans and half-orphans, the establishment and maintenance of industrial schools, the education of youth and exercise of mercy to the sick, unfortunate and destitute. Receives without charge, but legal and absolute surrender is required, orphan children of both sexes between 4 and 10 years of age, of good parentage, sound mind and in good physical health. Half-orphans taken only in especially urgent cases; one-fifth may be half-orphans. Capacity for 110. Average number of inmates, 100. Controlled by a board of trustees and an executive committee. Supported by voluntary contributions, mainly from the Evangelical churches in the State of New York. Rev. G. C. Berkemeier, director, to whom apply by letter for admission as above.

Westchester Temporary Home for Destitute Children, at White Plains, Westchester county.—Receives children to board from New York. (See under White Plains, in this division.)

OGDENSBURG — ST. LAWRENCE COUNTY. — Ogdensburg City Hospital and Orphan Asylum. (See class V, division 3.)

OSWEGO — OSWEGO COUNTY.—Oswego Orphan Asylum. Incorporated February 13, 1852, under the general statute.

OSWEGO — (Continued).

Opened in May, 1852.—For the support and education of orphan and destitute children, who, at a suitable age, are indentured to respectable families. Destitute children under 12 years of age may be received as boarders, at the discretion of the board of directresses, and upon such terms as may be agreed upon; also orphan and destitute children under 12 years of age, from the city, county or towns. Capacity for seventy. Average number of inmates, forty. Controlled by a board of trustees and directresses. Supported by fees for support from the county and parents, and by private contributions. C. J. Harmon, president; Gilbert Morrison, secretary; W. R. Hosmer, treasurer, all of Oswego. Apply to the executive committee the first Monday of each month, at the asylum.

PEEKSKILL — WESTCHESTER COUNTY.—St. Joseph's Home for Destitute Children of the "Missionary Sisters of the Third Order of St. Francis," which see under New York Homes, in this division.

PELHAM BAY PARK — WESTCHESTER COUNTY.—Institution of Mercy (Branch Home for Boys), which see under New York City Homes, in this division.

PETERBORO — MADISON COUNTY.—Children's Home. Incorporated by special act.—For the reception, care, support and education of orphan and half-orphan children, residents of Madison county, who are at the age of 15 years or even younger, adopted or indentured into good homes or families in the country. Capacity for thirty-five to forty children. The home is under the direction of the county superintendents of the poor; its finances are controlled by a board of five trustees. The building was donated for this worthy object by the late Gerrit Smith. Apply to any of the county superintendents at any time.

PLATTSBURGH — CLINTON COUNTY.—Home for the Friendless of Northern New York. Incorporated by special act,

PLATTSBURGH — (Continued).

chapter 492, Laws of 1874. Opened July, 1874. No. 9 Broad street.—To provide a home for destitute children; to supply their necessities, promote their intellectual, moral and religious improvement, and to fit them for usefulness and self-maintenance. Homeless and poor children, also children that become town and county charges, and those who are too old to be allowed to remain in the county-houses, and are received by the association to train and place in homes, either by adoption or indenture, or to board, by superintendent or overseers of the poor. Boys must be from 3 to 10 years of age, and girls from 3 to 16 years of age. Cripples, idiots, diseased and exceptionally vicious children are not admitted. Capacity for fifty-three. Average number of inmates, about thirty-five. Controlled by a board of seventeen managers. Supported by voluntary contributions and allowance made by supervisors of the poor for board of children intrusted by them to the home. Mrs. Moss Kent Platt, president, 14 Macomb street; Mrs. F. B. Hall, first vice-president, Cumberland avenue; Mrs. Jos. Gamble, second vice-president, Broad street; Mrs. P. S. Palmer, third vice-president, 14 Macomb street; Mrs. Barrett, fourth vice-president, 1 Court street; Mrs. M. P. Myers, secretary, 14 Macomb street; Mrs. Henry Orvis, treasurer, Brinckerhoff street. Apply by letter, or in person, to the president, at No. 14 Macomb street.

PORT JERVIS — ORANGE COUNTY.—St. Mary's Orphan Asylum. Incorporated ————. Opened May, 1871. No. 56 Ball street.—For the care of destitute orphans of both sexes, except those afflicted with contagious diseases. Capacity for 100. Average number of inmates, fifty-six. Controlled by the Sisters of Charity. Supported by county funds for the care of twenty-six orphans, and by the board charges from parents or guardians. Apply to the sister in charge of the asylum at any time.

POUGHKEEPSIE — DUTCHESS COUNTY.—Poughkeepsie Orphan House and Home for the Friendless. Incorporated

POUGHKEEPSIE — (Continued).

by special act April 15, 1852, as "Poughkeepsie Female Guardian Society." Reincorporated by amendatory act under present title, May 21, 1872. Organized in January, 1847. This nonsectarian institution was opened in 1857. Corner of South Hamilton and Franklin streets.—To provide a home for destitute and friendless children, of both sexes, until they can be committed to the guardianship of foster parents or worthy families, who will train them to respectability and usefulness. Deformed, imbecile or diseased children, and non-residents of the county, also those whose parents are able to work are not received. Capacity for fifty. Average number of inmates, fifty-five. Controlled by a board of women managers, and by an advisory council of twelve members. Supported by investments, contributions, partial board from parents, and appropriations from the city and county. Mrs. J. B. Jewett, first directress, Madison square; Mrs. J. R. Kendrick, second directress, 137 Academy street; Mrs. J. B. Platt, corresponding secretary, 43 South Hamilton street; Miss E. G. Wheeler, recording secretary, 117 Cannon street; Miss E. D. Swift, treasurer, 130 Academy street; Mrs. J. M. Farrar, matron. Apply to the committee on application at the home.

RANDOLPH—CATTARAUGUS COUNTY.—Western New York

Society for the Protection of Homeless and Dependent Children. Incorporated March 18, 1878, under the general statute, and the several amendments thereto. The institution was opened in September, 1878.—To establish and maintain at Randolph, in the county of Cattaraugus and State of New York, a home for friendless and destitute or unprotected children, and to receive and take charge of such children under the age of 16 years as may be voluntarily intrusted to them by their parents or guardians, or committed to their charge by competent authority, and to provide for their support and afford them the means of moral, intellectual and industrial education. The children are adopted or inden-

RANDOLPH — (Continued).

tured into good families. Capacity for and present number of inmates, 100 or more. Controlled by a board of trustees. Supported by appropriations from counties for commitments and by voluntary contributions. Wm. H. Henderson, president; N. M. Allen, vice-president; Charles Merrill, secretary; Asahel Crowley, treasurer; all of Randolph. Apply to the executive committee, through the matron, Miss Celia Bennett.

RED HOOK — DUTCHESS COUNTY.— St. Margaret's Home.—

A private Episcopal home for children. Apply for further information to the superintendent.

ROCHESTER — MONROE COUNTY.— Industrial School of Rochester. No. 133 Exchange street. (See class III, division 3.)

Jewish Orphan Asylum Association of Western New York. Incorporated May 26, 1881, under the general statute. The asylum was opened in January, 1880. No. 670 North street, corner of Paul street.—To take care of Jewish children, deprived of either or both parents and without adequate means of support, residing in the territory specified in the charter of the association; in those cities and places of Western New York, where local societies exist for the support of the institution, at present -- Buffalo, Rochester and Syracuse. Children of unsound mind, deaf or dumb, those suffering from contagious diseases, or having vicious habits, when over 11 years of age are not received. Capacity of asylum for forty. Average number of inmates, twenty-six. Twenty-eight were cared for last year. Controlled by a board of trustees. Supported by dues of members, voluntary contributions and by interest on sinking fund. Leopold Garson, president, Rochester; Siegmund Levyn, first vice-president, Buffalo; Dr. N. Jacobson, second vice-president, Syracuse; Dr. Max Landsberg, secretary, 420 East Main street, Rochester; I. Henry Danziger, treasurer, Syracuse; David Strauss,

ROCHESTER — (Continued).

superintendent. Apply through the local societies to the secretary of the association.

Rochester Home of Industry. Incorporated February 25, 1874, under the general statute. Opened in August, 1873. No. 712 East Main street.—For the protection of poor girls; educating them and teaching them trades by which they may make an honorable livelihood; respectable friendless and poor young girls whose parents do not take proper care of them. Fallen girls or those of disreputable character are not received. Capacity for 100. Average number of inmates, ninety-five. Controlled by a board of trustees. Supported by board of inmates, donations and industries of the inmates. Mother Hieronymio O'Brien, president; Sister Eusebius Cunnane, secretary and treasurer; Sister Agnes Hines, Sister Ursula Murphy, Sister Evangelist Haggerty, Sister Justina Carroll, Sister Borgia Lynch, and Sister Rose Hendricks, trustees. Apply to the president at the home at any time.

Rochester Orphan Asylum (The). Incorporated by special act, chapter 104, Laws of 1838. Amendatory acts, chapter 94, Laws of 1890; chapter 851, Laws of 1871; chapter 439, Laws of 1886; chapter 2, Laws of 1888. Opened in April, 1837. Hubbell park.—For the protection, relief and education of orphan and destitute children under 12 years of age. Capacity for 125. Average number of inmates, 103. Controlled by a board of thirty-six lady managers. Supported by board paid by the city and county for pauper children; by small sums from parents and by voluntary contributions. Mrs. Wm. N. Sage, president, 157 Plymouth avenue; Mrs. E. H. Hollister, first vice-president; Mrs. George C. Buell, second vice-president; Mrs. Sidney B. Roby, third vice-president; Mrs. E. B. Jenner, recording secretary; Mrs. Martin Briggs, corresponding secretary; Miss Ella Durand, treasurer, all of Rochester. Apply to the managers at the asylum.

St. Joseph's German Roman Catholic Orphan Asylum Society of Rochester. Incorporated by special act, April 23, 1863. Amendatory acts, passed April 15, 1869, and March 25, 1870.

ROCHESTER — (Continued).

The asylum was opened May, 1864. No. 221 Andrew street.— For the relief and moral and scientific education of orphan, half-orphan and destitute children whom the authorities may bind out, whether they have been committed or surrendered, provision being made for securing an education suitable for such children. No colored children received. Capacity for 175. Average number of inmates, 105. Controlled by a board of directors. Supported by appropriations from the city and county, and by donations. M. Leckinger, president; L. Fien, vice-president; Leo A. Schlitzer, secretary; Rev. Joseph Wirth, treasurer; Jacob Stupp, director in charge, to whom apply.

St. Mary's Boys' Orphan Asylum. Incorporated December 24, 1864, under the general statute. Opened in November, 1864. West avenue, corner Genesee street.—A temporary home for children under 14 years of age, as a preparation for learning trades, or being bound out in suitable homes. Capacity for 120. Average number cared for, ninety. Controlled by a board of trustees, and the Sisters of St. Joseph. Supported by church contributions, appropriations from city and board paid by parents. Rt. Rev. J. F. O'Hara, V. G. G., president; Sister M. Justina, secretary and treasurer, to whom apply at the asylum.

St. Mary's Industrial School of the Sisters of Mercy. Incorporated May 21, 1857. No. 29 South street.—For the reception, care, support and education, in industrial pursuits chiefly, of orphan, half-orphan and destitute girls of good moral character, from 12 to 20 years of age. Those of a refractory or corrupted nature are excluded. The girls are taught fine needlework, tailoring and shirtmaking, etc., and thus enabled to become self-supporting. Parents may also send their children to be educated, by paying a reasonable sum for board and tuition. Average number of inmates, thirty to thirty-five. Controlled and supported by the Sisters of Mercy, to whom apply at the school at any time.

ROCHESTER — (Continued).

St. Patrick's Female Orphan Asylum. Incorporated April 9, 1845, by special act. Established in 1842. Corner of Frank and Vought streets.—To provide education, maintenance and trades for female orphan children, and to secure them homes in respectable families, and half-orphan girls, from 3 to 14 years of age, are received, given a good plain education and taught useful trades, by which at maturity they can support and protect themselves; those who wish at the age of 14 to learn trades, are sent to the Industrial School of the Sisters of Mercy. Controlled by the Sisters of Charity. Supported by public funds, contributions, sales of work and board of inmates. Apply to the sisters at any time.

RONDOUT — ULSTER COUNTY.—Orphan Asylum of Sisters of Charity, at Rondout. Incorporated July 13, 1871, under the general statute.—To receive and gratuitously care for, educate, maintain and support orphan children of both sexes. Controlled by a board of trustees.

RYE — WESTCHESTER COUNTY.—St. Benedict's Home for Colored Children. (See under New York Homes in this division.)

SARATOGA — SARATOGA COUNTY.—Church Aid of the Protestant Episcopal Church, in the Town of Saratoga Springs. Incorporated May 28, 1870, under the general statute. The home of the Good Shepherd was opened in May, 1870, on State street, corner of Greenfield avenue. Has also a branch mission chapel.—To furnish a home, to provide food and clothing and to give religious instruction to the poor and homeless as are worthily recommended by the managers. Capacity for and average number of inmates, sixteen. Controlled by a board of lady managers and by a board of trustees. Supported by voluntary contributions. Mrs. John A. Manning, directress; Mrs. Frederick Johnson, treasurer; Mrs. W. B. French, secretary of board of managers, to whom apply by letter to the home.

SARATOGA — (Continued).

Home of the Good Shepherd of the Church Aid of the Protestant Episcopal Church, etc., which see in this division.

St. Christina Home. Ballston avenue. No information has been received.

Saratoga Home for Children. No information has been received.

SYRACUSE — ONONDAGA COUNTY.—German Evangelical

Lutheran Orphan Asylum of Syracuse, New York (The). Incorporated August 5, 1884, under the general statute. The institution was opened in 1885. Spring street, near Butternut street.—To receive, care for, feed, clothe, educate and maintain and to extend relief to orphan and other destitute children, in a Christian manner, and according to the doctrines of the Evangelical Lutheran Church. Children suffering from deformity or disease are excluded. Capacity for forty. Average number, twenty-four. Controlled by a board of directors. Supported by voluntary contributions, pay for children, from parents and from the overseers of the poor, both city and county. Rev. Alexander Oberlander, president and superintendent, 705 Butternut street; Harry Klein, secretary, 120 John street; Margaretha Walther, treasurer, 815 Butternut street. Applications for admission of children must be made to the superintendent at the institution at any time.

House of Providence of Sisters of Charity. (See "Sisters of Charity of the House of Providence," in this division.)

Jewish Orphan Asylum Society of Syracuse. Connected with the Jewish Orphan Asylum Association of Western New York, at No. 670 North street, Rochester, Monroe county, which receives Hebrew children from Syracuse. (See under Rochester Homes for Children, in this division.) No information has been received from the officers.

Onondaga County Orphan Asylum. Incorporated by special act, May 10, chapter 183, Laws of 1845. Amendatory acts, chapter 165, Laws of 1847 and others. Opened in 1840. East Genesee street.—For the care of orphan, half-orphan

SYRACUSE — (Continued).

and destitute children. No contagious or reformatory cases are received. Capacity for 250. Average number of inmates, 175. Controlled by a board of trustees. Supported by donations and boarding of inmates who may be sent there by overseers of the poor, chargeable to county, city or towns. Peter Burns, president; Charles P. Clark, vice-president; W. E. Abbott, secretary; Trust Deposit Company of Onondaga, treasurer; Mrs. M. A. Judson, first lady directress; Mrs. E. D. Dickinson, secretary; Mrs. E. M. Seymour, treasurer. Apply to the board of lady managers at the asylum.

St. Ann's Foundling Asylum. (See St. Joseph's Maternity and Foundling Asylum of Syracuse. (See class VII, division 4.)

St. Joseph's Maternity and Foundling Asylum of Syracuse. Corner Tuttle and Carbon streets. (See Class VII, division 4.)

St. Vincent's Asylum and School of Syracuse. Incorporated June 11, 1860, under the general statute and the amendments thereto. Opened in June, 1860. Corner Madison and Montgomery streets.—To establish and maintain an asylum and school for destitute and poor female children, and for no other or different purpose. Cares for abandoned half-orphan and orphan girls and committed children, except those afflicted with contagious diseases or of confirmed evil habits. Capacity for 200. Average number of inmates, 160. Controlled by a board of trustees and twelve Sisters of Charity, all of whom reside in the institution. Supported by voluntary contributions, appropriations from the city and county, etc. Apply in person, or in writing, at any time, to the superioress, who is also president of the board of trustees.

Sisters of Charity of the House of Providence (The). Incorporated April 28, 1877, under the general statute. The institution was opened in 1842. Grand avenue. (The mother house of this order is at Emmitsburg, Maryland.)—To establish and maintain in one or more places, within the county of Onondaga, N. Y., hospitals, asylums, schools of learning, and other institutions for the support and education of orphans and half-orphans, and other destitute chil-

SYRACUSE — (Continued).

dren, and for the care of the indigent, aged, infirm and sick persons, and to furnish temporary homes for indigent females seeking employment. The House of Providence is for the support and education of orphan and half-orphan boys over 3 years of age, and of sound mind. Capacity for 176. Average number of inmates, 120. Controlled by the Sisters of Charity. Supported by appropriations from the city and county and by friends. Sister Marie Louise Hunt, superintendent, assisted by ten Sisters of Charity. Apply in person or by letter at any time to the institution.

TOMPKINS COVE — ROCKLAND COUNTY.—House of the Good Shepherd. Incorporated November 30, 1870, under the general statute. Opened February 13, 1866.—To afford a home in the country for orphan and destitute children, over 2 years of age, without respect to sect or denomination; to train poor boys to farm work or trades; to educate deserving and earnest-minded youths who wish to work their own way and elevate their position, and to do mission work. Children are adopted, or at a suitable age are indentured into good families in the country. Capacity for 50. Average number of inmates, twenty. Controlled by a board of managers. Supported by voluntary contributions, etc. Ebenezer Gay, president and treasurer, Tompkins Cove; Rev. George H. Houghton, first vice-president; Henry Chamberlaine, secretary, New York city. Apply at the house by letter or in person at any time.

(THROGG'S NECK) WESTCHESTER — WESTCHESTER COUNTY. St. Joseph's Orphan Asylum in the city of New York, branch asylum. (See under New York Homes in this division.)

TROY — RENSSELAER COUNTY.—Ladies' Association for the Relief of Orphan and Destitute Children, auxiliary to the Troy Orphan Asylum. Mrs. Wm. H. Hart, first directress;

TROY — (Continued).

Miss P. H. Griffith, secretary, 152 Second street. (See under Troy Orphan Asylum in this division.)

St. Vincent Female Orphan Asylum, city of Troy. Incorporated November 2, 1863, under the general statute. Opened in April, 1848.—For benevolent and charitable purposes, as an asylum and school for destitute female children, under 16 years of age, who must be orphans, half-orphans or destitute and homeless. Capacity for 250. Average number of inmates, 200. Controlled by the Sisters of Charity. Supported by appropriations from the city and county for children committed by them, and by voluntary contributions. Gertrude Balfe, president; Elizabeth Donahue, vice-president; Anna Flaherty, secretary; Margaret Murray, treasurer; Louise Tirado, trustee, all at the asylum. Apply in person or in writing to the officers at any time at the asylum.

Troy Catholic Male Orphan Asylum. Incorporated January 25, 1864, under the general statute. Opened in 1852, corner of Hanover and Bedford streets.—For the nurture, care and education of destitute orphan and half-orphan children from Troy and vicinity, under 14 years of age, without distinction of race, color or religion. None suffering from contagious diseases admitted. Children must be committed by a magistrate, superintendent or overseer of the poor, or be intrusted as paid boarders. Capacity for 325. Average number of inmates, 302. Four hundred and forty-seven children were cared for last year. Controlled by seven trustees. Supported by city, town and county per capita appropriations, donations, appropriations from Troy board of education, and by board from parents and guardians. B. Kelly, president; 571 First street; G. J. Braman, vice-president, 62 Congress street; Brother Dominica, secretary, and Brother Elwarm Joseph, treasurer, at the asylum. Apply to the superintendent at the asylum at any time, either upon commitment or by parents and guardians.

Troy Orphan Asylum. Incorporated April 10, 1835, by special act. Amendatory act, passed March 18, 1859. No. 294

TROY — (Continued).

Eighth street.—For the care of destitute, orphan and half-orphan children. All children surrendered to the institution are cared for free, such as are committed are paid for by the city and county, at the rate of one dollar and fifty cents a week for each child. Capacity in the new building for 250. Average number of inmates in former years, 100. Controlled by a board of managers and the "Ladies' Auxiliary Association." Supported by the city and county, income of permanent fund and occasional subscriptions. C. W. Tillinghast, president; L. E. Gurley, vice-president; W. H. Hollister, Jr., secretary; Charles E. Hanaman, treasurer. Apply to the president, matron or the executive committee.

UNIONPORT, VAN NEST STATION — WESTCHESTER COUNTY.—German Odd Fellows' Home and Orphanage of the German Odd Fellows' Home Association of New York. (See under New York Homes, class V, division 3.)

UTICA — ONEIDA COUNTY.—House of the Good Shepherd. Incorporated February 8, 1872, under the general statute. Opened June 10, 1875. Bleecker street.—For the care, maintenance and instruction of friendless, neglected or destitute children of the diocese of Central New York of the Protestant Episcopal Church. For those in sound health, over 1 year and under 7 years of age, who are orphans, half-orphans or whose parents, from illness or other causes, are unable to support them. Capacity for forty-five. Average number of inmates, fifty. Controlled by a board of trustees and a board of lady managers. Supported by voluntary contributions and by a partial endowment. Mrs. L. C. Watson, president, 270 Genesee street; Mrs. J. E. Wolcott, secretary; Mrs. M. L. Brandegee, treasurer, to any of whom apply, or to the committee of managers at the home, as above.

St. John's Female Orphan Asylum. Incorporated March 28, 1849 (or March 18, 1848), under the general statute. Opened in September, 1834. No. 80 John street.—To maintain and educate

UTICA — (Continued).

female orphan and destitute children over 2 and under 16 years of age. Homes and adoption are obtained for the younger ones, and trades are taught the older ones, who remain in the institution until able to earn a respectable livelihood. None afflicted with contagious diseases are received. Capacity for 200. Average number of inmates, 143. Controlled by the Sisters of Charity. Supported by appropriations from the board of supervisors, and by gifts from individuals. Sister Stanislas Cohen, president and treasurer; Sister M. James Feeley, secretary. Apply to the president at the asylum at any time.

St. Vincent's Industrial School (or Protectorate). (See class VIII, division 6.)

Utica Orphan Asylum. Incorporated by special act, April 19, 1830, as "The Orphan Asylum Society in the Village of Utica." An act to amend the first act of incorporation was passed March 26, 1856, whereby the corporate name was changed to "The Utica Orphan Asylum;" further amended by act, chapter 286, Laws of 1871, also embodying the special acts relating to destitute and orphan children; chapter 159, Laws of 1855; chapter 522, Laws of 1875; chapter 112, Laws of 1878; chapter 438, Laws of 1884.—The sole object of said society shall be the support and education of orphan children; but the trustees and managers of said society may, under such regulations as they shall from time to time adopt, admit children who have one parent living to a participation in the benefits of said society; also provisions for receiving real and personal estate by gift, etc. Homeless children of Utica—girls under 14 years of age and boys under 12 years of age—are received, but in case of both parents living, only on commitment by the superintendent or overseers of the poor, who have the privilege also, upon application to the committee of reception, of placing in the asylum, to fill vacancies, orphan children from other towns in the county, on condition of agreement of paying for board and clothing. In all cases orphan children of Utica have the preference for admission.

UTICA — (Continued).

Imbecile children, and those having severe chronic diseases, and children under 2 years of age, unless entire orphans, are excluded. Capacity for 140. Controlled by a board of trustees. Supported by per capita allowance from supervisors for committed children, interest on funds, contributions and payments by parents or guardians, etc. Mrs. Sarah W. Wood, first directress; Mrs. Mary B. Gray, recording secretary; Mrs. C. F. Jackson, corresponding secretary; Mrs. Emma M. Swan, treasurer. Apply to the "Committee for Reception and Placing out of Children," at the asylum at any time.

VERPLANK — DUTCHESS COUNTY.—Order of Brothers of Nazareth. (See class VII, division 2.)

VERSAILLES — CATTARAUGUS COUNTY.—Thomas Asylum for Orphan and Destitute Indian Children. Incorporated by special act, April eleventh, chapter 233, Laws of 1855. Amendatory acts passed March 1, 1875, and April 14, 1887. Opened September, 1855, on the Cattaraugus reservation.—For the care, education and training of orphan and destitute Indian children, with a view of making them self-supporting, and who are taught to do most of the work in the buildings and on the farm. Capacity for 100. Average number cared for annually, 103. Controlled by a board of managers, appointed by the State. Supported by the State. Hon. William C. Bryant, president, Buffalo; executive committee, O. S. Torrance, W. H. Stewart, F. C. Vinton, all of Gowanda; J. H. Valkenberg, secretary; W. H. Bard, treasurer, Gowanda. Apply to the superintendent and examining committee of the board of trustees at the asylum.

WATERTOWN — JEFFERSON COUNTY.—Henry Keep Home. (See class V, division 3.)

Jefferson County Orphan Asylum. Incorporated May 11, 1859, under the general statute. Amendatory act, chapter 38, Laws of 1864.—For the care of orphan and other children, over 1 and under 16 years of age, who may be without homes, or fathers,

WATERTOWN — (Continued).

or mothers, who fail to provide or care for them. Children must be received through some proper officer of the State, county or town, or, in a charitable case where no payment is expected through the officers of the institution. Children received from the superintendent or overseers of the poor are boarded at the rate of one dollar and fifty cents per capita a week, paid by the towns from whence they come; others are boarded at the rate of twenty-five cents to one dollar and fifty cents per week, according to the ability of the parent or guardian to pay, but destitute children are received free, and at a suitable age are adopted or indentured into good families in the country. Capacity for sixty. Average number of inmates, fifty. Controlled by a board of lady directresses and a board of trustees. Supported by interest on investments, board of children, and supervisors' appropriation for committed children. Miss Frances E. Hungerford, president; Miss Gertrude S. Knowlton, secretary of board of directresses; Willard Ives, president, and G. M. Knowlton, treasurer of board of trustees. Mr. and Mrs. O. A. Freeman, superintendents, at the asylum. Apply for admission to Miss Frances E. Hungerford, Watertown.

WATERVLIET — ALBANY COUNTY.—Fairview Home for Friendless Children. Incorporated in July, 1888, under the general statute. Opened in June, 1888. Undenominational.—To receive and retain any child committed to it by a court or magistrate, for a violation, by parent or guardian, of any of the provisions of the laws of this State relating to or affecting children; to provide a home for their support and instruction; and also to receive and care for other destitute and friendless children over 4 and under 16 years of age, who are afterwards adopted, or, at a suitable age, indentured, into respectable and reliable families. Children are also boarded temporarily. Reformatory cases are not admitted. This is not a local institution; applications and commitments are received from Columbia,

WATERVLIET — (Continued).

Greene, Rensselaer and Saratoga counties. Capacity for, and average number of inmates, 100. Controlled by a board of thirty directors, elected from the various Protestant churches. Supported by money received for commitments and by charitable contributions. James B. Jermain, president, Albany; J. H. Harmon, first vice-president, West Troy; George R. Meneeley, second vice-president, Albany; Rev. Henry E. Cobb, secretary, West Troy; Miss M. C. Jermain, treasurer, Albany; Eugene Burlingame, counsel, Albany; Miss Frances E. Kingsley, matron, West Troy, to whom apply at the home.

St. Colman's Industrial School and Orphan Asylum of Water-vliet. Incorporated July 26, 1884, under the general statute. Opened in November, 1881.—To maintain a charitable industrial school, and to instruct the inmates thereof in such branches of industry and education as may fit them for useful trades and occupations; and also to take care of and educate destitute orphan and half-orphan children of both sexes, under 15 years of age, committed by the county superintendent of the poor of surrounding districts, and to maintain an orphan asylum and school for the inmates thereof. Children are returned to friends when they are in a position to provide for them, otherwise suitable homes are found for them. Capacity for 200. Average number of inmates, 100. Controlled by a board of trustees and the Sisters, who are officers in charge. Supported by appropriations from the county and by voluntary donations. Apply to the Sisters in charge at the institution.

WESTCHESTER — WESTCHESTER COUNTY.—New York Catholic Protectory. (See under New York Reformatories for Children, class VIII, division 6.)

WEST NEW BRIGHTON — RICHMOND COUNTY (S. I.).—Home for Seamen's Children, of "The Society for the Relief of Destitute Children of Seamen." (See under New York Homes, in this division.)

WEST NEW BRIGHTON — (Continued).

Nursery and Child's Hospital (Country Branch). (See under New York Children's Hospitals, class VII, division 4.)

WHITE PLAINS — WESTCHESTER COUNTY.— Westchester Temporary Home for Destitute Children. Incorporated June 12, 1883, under the general statute. (Previously incorporated February 28, 1880, as "The Westchester Temporary Home for Protestant Children.") Opened April, 1880. North street. To receive all such children of Westchester county as may be legally committed to its charge or care, in a temporary home, in which such children may be maintained, nursed and taken care of, and receive instruction, training and discipline, and be taught to labor in such useful manner as may be most instructive and conducive to the future usefulness of such children, until they shall be, under the care and direction of the society, placed in proper and suitable families and homes, as may be deemed most advisable, or be otherwise disposed of according to law; to look after and exercise such friendly and parental guardianship over such children as they may be able, and by law entitled to do, until they arrive at the age of majority. The home is particularly for destitute children of Westchester county, but children are received from New York city temporarily to board at two dollars a week, which sum covers all expenses of clothing, education, medical attendance, etc. Capacity for 125. Average number of inmates, 110. Controlled by a board of managers. Supported by supervisors through the superintendent of the poor, board from parents and guardians and by voluntary contributions. Charles Butler, LL. D., president, Hartsdale, P. O.; Mrs. Roswell Skeel, first vice-president, Irvington-on-Hudson; Mrs. Charles F. MacLean, second vice-president, White Plains; Richard M. Hoe, secretary, Irvington-on-Hudson; Miss H. C. Brinckerhoff, assistant secretary, Sing Sing; Mrs. Richard M. Hoe, treasurer, Irvington-on-Hudson. Apply through the justices, superintendent of the poor, and the overseers of the poor of the county, or to James W. Pierce, superintendent at the home.

YAPHANK — SUFFOLK COUNTY.— Suffolk County Children's Home. (Protestant Episcopal.) No information received.

YONKERS — WESTCHESTER COUNTY.— Yonkers Nursery and Home. Incorporated May, 1884, under the general statute. Opened January, 1881. No. 176 Palisade avenue.— To provide a temporary home for destitute children of both sexes and all nationalities under 8 years of age, residents of Westchester county, who if not claimed or returned to their parents or friends, at 8 years old are placed in the temporary home at White Plains. The aim of the society is to meet the poor in their destitution by caring for their children until they are able to support a home. Parents or friends are expected to contribute according to their ability, when practicable, for the support of the child or children taken to the home. Sick children and those whose parents are working are not received. Capacity for twenty-three. Average number of inmates, fifteen. Thirty-two children were cared for last year. Controlled by a board of trustees, and a board of lady managers. Supported entirely by voluntary contributions. Rev. W. H. Mills, president, 41 Park avenue; Rev. A. B. Carver, vice-president, St. John's rectory; Thomas G. Hillhouse, secretary, Locust Hill avenue; Henry Albro Smith, treasurer, 115 Buena Vista avenue. Apply to the committee on admission, in person at any time at their residences.

DIVISION 3.— HOMES FOR ADULTS ONLY. (See also, Temporary Homes (Class III), Relief for Defective and Afflicted, also, Reformatories.)

ALBANY — ALBANY COUNTY.— Albany Guardian Society and Home for the Friendless. Incorporated November, 1852. Organized in November, 1851. Opened in January, 1852. No. 553 Clinton avenue, corner of Perry street.— This society was formed originally to help both friendless old and young, and to give a temporary home to those out of employment; but

ALBANY — (Continued).

now it maintains exclusively a home for aged, respectable and destitute Protestant women of sound mind and not confirmed invalids. The object of the amendment to the constitution, made January, 1863, "shall be, to establish and sustain an institution, to be called the 'Albany Industrial Home for the Friendless,'" which shall provide a temporary home for respectable females, without employment, friends or home. Previous to the amendment of Article IV of the constitution, applicants were admitted from neighboring towns, but now only those resident in Albany city, whose cases have been thoroughly investigated and found worthy and who are without means of support, are received on payment of an admission fee of \$100. Any member of the board of managers has power to send any woman to this institution for temporary shelter, the time not to exceed one week. Average number of inmates, forty-two. Controlled by a board of lady managers. Supported by income from invested funds, legacies and by voluntary contributions. Mrs. Frederick Townsend, first directress, 3 Elk street; Mrs. Samuel Patten, second directress, 192 State street; Mrs. Archibald McClure, third directress, 232 State street; Miss Mary P. Roberts, corresponding secretary, 244 State street; Miss Emily D. Sumner, treasurer, 21 North Pearl street; A. P. Stevens, treasurer of the invested funds, National Savings Bank. Apply to any office or managers, three of whom are elected from Protestant churches.

Home for Aged Men. (See under Watervliet, Albany county, in this division.)

Home of the Aged of the Little Sisters of the Poor. Incorporated under the general statute. Opened in May, 1871. 415 Central avenue.—A free home for the worthy aged and infirm poor of both sexes over 60 years of age. Capacity for 155. Average number cared for annually, 191. One hundred and fifty-five inmates last year. Controlled by the Little Sisters of the Poor. Supported by voluntary contributions. Sister Mary Jane Legall, president and treasurer, at the home;

ALBANY — (Continued).

Nicholas Hussey, secretary, 340 Madison avenue. Apply to the Sisters at the home.

Retreat for Ladies and Homeless Girls (Dominican Convent and Asylum). No. 866 Madison avenue. (See class V, division 2.)

AUBURN — CAYUGA COUNTY.— Auburn Home for the Friendless. Incorporated, under the general statute, July 31, 1865. No. 46 Grant avenue.—To furnish the comforts of a home to persons of good character, who may be in reduced and dependent circumstances, under such regulations and restrictions as may be provided and established by the trustees of the institution. Persons who may be received at the home, are aged, infirm or invalid women, who are homeless women of good moral character, in search of employment, and such as having means, require temporary homes and are willing to conform to the rules of the family. Residents of the city can be received on recommendation of the executive committee; residents of the county are admitted on payment of the sum of three dollars a week, payable in advance. Average number in home, seventeen. Controlled by a board of trustees and a board of managers. Supported by legacies, board of inmates, donations, etc. Apply to any of the managers through the superintendent at the home.

BATH — STEUBEN COUNTY.—New York State Soldiers' and Sailors' Home. (See class II, division 1.)

BINGHAMTON — BROOME COUNTY.—Chapel and House of the Good Shepherd. Incorporated January 25, 1870, under the general statute. Opened in 1870.—For the care and support of indigent ladies, preference in all applications being given to needy members of the Protestant Episcopal Church, to which this charity owes its existence and its maintenance; but other persons will be admitted from any society or denomination, upon such terms as the managers shall prescribe; usually persons so relieved from other organizations are

BINGHAMTON — (Continued).

expected to pay not less than two dollars per week for board. Charges are made in proportion to the means and circumstances of the applicants. Cases of sudden injury, requiring immediate care, are received at once, and if need be without charge. No cases of contagious disease admitted. Capacity for eighteen. Average number of inmates, eleven. Controlled by a board of trustees, also a board of lady managers. Supported by bequests, donations and board of temporary inmates. Rev. R. G. Quinnell, Rev. W. H. Platt, Rev. Wm. Day, J. C. Robinson, John Anderson, John Evans, and David Lyon, trustees. Mrs. J. C. Yeoman, president; Mrs. J. St. John Cronin, secretary; Mrs. Joel Fuller, treasurer of board of managers, all of whom reside in Binghamton. Apply by letter or in person to any of the managers at any time.

BROOKLYN — KINGS COUNTY.— Baptist Home of Brooklyn. Incorporated by special act, April 9, 1869. Opened June, 1875. Throop and Greene avenues.—For the worthy infirm, aged and needy members of the Baptist churches of Long Island. Applicants must have been members for five years previously of any Baptist church, and must pay admission fee of \$100, and all property in possession at time of entrance must be secured to the home. Capacity for fifty. Average number of inmates, forty-eight. Controlled by a board of directors and a board of managers. Supported by voluntary contributions and by admission fees. Charles H. Dutcher, president, 117 Gates avenue; George B. Forrester, secretary, 382 DeGraw street; Frederick C. Linde, treasurer, 164 Ross street. Apply through the pastor or deacon of any Baptist church to any officer of the home.

Brooklyn Home for Aged Colored People (formerly "Zion Home for Colored People"). Incorporated March, 1891. Took possession from the old corporation in New York, March 14, 1891. Dean street, near Troy avenue.—To provide a home during life, and when so arranged for, to furnish burial for aged colored people of both sexes, upon the payment of an

BROOKLYN — (Continued).

admission fee, and the signing of a specified agreement on entering. Unsectarian. Incurable and intemperate cases are not admitted. Capacity of present home for twenty-five. Controlled by a board of managers. Supported by voluntary contributions from individuals, churches, societies, etc. Mrs. Jerome S. Plummer, president, 1276 Pacific street; Mrs. Charles H. Hall, first vice-president, 157 Montague street; Mrs. J. N. Conklin, corresponding secretary, 102 Fort Greene place; Mrs. Edwin Beers, treasurer, 131 Remsen street; Mrs. F. M. Edgerton, recording secretary, 130 Macon street, to whom apply by letter at any time.

Brooklyn Home for Aged Men. Incorporated February 27, 1878, under the general statute. No. 745 Classon avenue, between Prospect and Park places.—To relieve and aid respectable, indigent men, and particularly to provide, or help to provide them with a comfortable, Christian home. Applicants must be Protestants over 70 years of age, citizens of the United States, residents of Kings county for five years next previous to their application; they must furnish satisfactory testimonials as to respectability of character and previous history, also a certificate of physical fitness from the home physician, and pay an admission fee. Hospital cases and those who have friends who can support them are not received. Capacity for forty. Average number of inmates, twenty-seven. Last year, thirty-four were cared for. Controlled by a board of managers, chosen from the various Protestant churches of Brooklyn. Supported by voluntary contributions, collections, legacies and admission fees. Mrs. Hayden W. Wheeler, president, 274 Washington avenue; Mrs. Thomas E. Stillman, first vice-president, 95 Joralemon street; Mrs. J. H. Bates, second vice-president, 64 Remsen street; Mrs. D. H. Cochran, corresponding secretary, 171 Schermerhorn street; Mrs. M. R. Hawley, recording secretary, 4 Clark street; Mrs. J. N. Berger, treasurer, Babylon, L. I. Apply by letter for admission to any member of the board of managers.

Brooklyn Home for Consumptives. Kingston avenue, near Douglass street. (See class VII, division 2.)

BROOKLYN — (Continued).

Brooklyn Methodist Episcopal Church Home, for the Aged and Infirm Members of the Methodist Episcopal Church, in the city of Brooklyn. Incorporated by special act, May 10, chapter 363, Laws of 1883. Opened January, 1884. Park place, corner New York avenue.—To provide a comfortable residence, with board, clothing, employment, medical aid, care and attendance, religious privileges and, at death, a respectable burial, for the aged and infirm members of the Methodist Episcopal Church, in Brooklyn, over 65 years of age, having no means of support, or friends or children who will provide for them, and who come well recommended by the pastor and stewards of the church to which they belong, as having been church members in good standing for not less than five years immediately preceding their application. Insane, epileptic, or such persons afflicted with serious diseases as may be detrimental to the interests of the home, are not received. Capacity for sixty. Average number of inmates, forty-seven. Controlled by a board of managers. Supported by collections in churches, donations, annual fairs, etc., and by voluntary contributions. Mrs. M. M. Voorhies, president, 104 Montague street; Mrs. J. G. Tuthill, Mrs. N. L. North, Mrs. M. V. Phillips, Mrs. S. L. Beiler, vice-presidents; Mrs. H. C. M. Ingraham, recording secretary, 115 Leffert's place; Mrs. A. A. Willson, corresponding secretary, 561 Lorimer street; Mrs. A. P. Strout, treasurer, 366 Carleton avenue; Mrs. E. L. Bicknell, matron, through whom apply to the committee on admission of the board of managers.

Brooklyn Society for the Relief of Respectable Aged, Indigent Females. Incorporated ———, 1851, under the general statute. No. 320 Washington avenue.—Maintains a home for respectable aged, indigent and homeless women over 60 years of age. Unsectarian. Capacity for ninety. Average number of inmates, eighty. Eighty-six beneficiaries last year. Controlled by a board of lady managers and an advisory board of gentlemen. Supported by legacies, donations and by voluntary church subscriptions. Mrs. Theodore Pol-

BROOKLYN — (Continued).

hemus, first directress, 60 Remsen street; Mrs. Wm. C. Bowers, second directress, 58 Quincy street; Mrs. D. Fairbanks, third directress, 9 Pierrepont street; Mrs. Wm. H. Smith, corresponding secretary, 415 Cumberland street; Miss M. Howard, recording secretary, 13 Portland avenue, all of Brooklyn; Mrs. A. C. Washington, treasurer, 28 East Sixty-second street, New York city. Apply, with written recommendations from a subscriber, the first Thursday in each month, to the committee on applications, at the home.

Church Charity Foundation of Long Island (The).—Home for the aged, which see in this division; also see class V, division 2.

Faith Home for Incurables. No. 296 Park place, corner of Classon avenue. (See class VII, division 2.)

German Evangelical Aid Society of the City of Brooklyn. Incorporated March 28, 1879, under the general statute. Maintains a home on Fairfax street, between Broadway and Bushwick avenue.—To provide a comfortable home and to care for helpless and friendless persons of 60 years of age and upwards who are free from all contagious diseases. An admission fee of \$500 is charged when applicants have the means. No admission money is refunded. Capacity for, and average number of inmates, 168; about 178 inmates last year. Received seventy-eight dollars for sale of knitting and garden produce. Controlled by a board of counsel and directors, representing various churches. Supported by church donations and voluntary contributions. Rev. J. G. Hehr, president, 57 Stagg street; Rev. F. H. Rey, vice-president, 56 Stagg street; Rev. G. H. Miller, secretary, 213 Boerum street; Mrs. M. Wied, treasurer, 153 Sumpter street; Mrs. M. A. Miller, first directress and matron. Apply to the board of directors.

Greenpoint Home for the Aged of the Ladies' Benevolent Association of Greenpoint, Seventeenth ward, which see in this division..

Home for the Aged of the "Church Charity Foundation of Long

BROOKLYN — (Continued).

Island." Albany avenue, corner of Atlantic avenue and Herkimer street. Organized in 1852.—For the care and maintenance of indigent, aged persons, over 65 years of age, communicants only of the Protestant Episcopal Church. An admission fee of \$100 is required and a surrender of all property to the home. Controlled by the board of managers of the corporation. Apply for admission to the chairman of committee on admissions before the third Wednesday of the month. (See class V, division 2.)

Home for the Aged of the Little Sisters of the Poor. Incorporated October 1, 1869, under the general statute. Opened September, 1868. Bushwick and De Kalb avenues; branch home, opened December, 1879, Eighth avenue and Sixteenth street, South Brooklyn.—To provide a gratuitous and permanent home for the aged and infirm poor and destitute persons of both sexes, over 60 years of age, of good moral character, without distinction of creed or nationality. Capacity of both homes for 560; average number of inmates and number cared for last year, 540. Controlled by the Little Sisters of the Poor. Supported by charitable contributions solicited from door to door. Sister Germaine, president; Sister Madeleine, vice-president; Sister Mary Edward, secretary; Sister St. Emma, treasurer. Apply to the Sister Superior of the home in the district where the person resides at any time.

Ladies' Benevolent Association of Greenpoint. Incorporated January 20, 1883, under the general statute. Organized, 1872, Greenpoint, Seventeenth ward of Brooklyn.—To provide for the temporal and spiritual advancement of the worthy poor of the Seventeenth ward of Brooklyn, either men, women, or children, and also to strive for the support of a home for the aged Protestant poor of said ward, called the "Greenpoint Home for the Aged." Established, 1882]. Oak and Guernsey streets, eastern district.—For respectable men and women of 60 years of age and upwards, who are without means of self-support. Capacity for twenty inmates. Controlled by a board of officers and standing committees. Supported by the Water-

BROOKLYN — (Continued).

bury estate, excise money, fees, sale of work and by voluntary contributions. Mrs. Edwin Finkel, president, 678 Lorimer street; Mrs. S. E. Dougherty, first vice-president, 133 Noble street; Mrs. O. T. Cornell, second vice-president, 154 Noble street; Mrs. J. S. Ogilvie, recording secretary, 144 Kent street; Mrs. R. J. Whittemore, corresponding secretary, 116 Milton street; Mrs. Marvin Briggs, treasurer, 128 Noble street. Apply to any member of the association at any time, or to the standing committee on application for admission to the home.

Presbyterian Home for the Aged in the City of Brooklyn. Incorporated June 6, 1893, under the general statute.— To establish a home for aged people connected with the Presbyterian Church, in the United States of America, who reside within the jurisdiction of the presbytery of Brooklyn. Controlled by a board of trustees, directors and managers, viz.: Robert Henderson, Hugh McDougall, Geo. H. Southard, Edward P. Loomis, Thos. A. Perkins, John J. Tower, N. Woolsey Wells, J. A. Jenkins, M. D., James M. Ham.

Wartburg Home for Aged and Infirm. Incorporated May 29, 1878, under the general statute. Fulton extension, between Georgia and Sheffield avenues, Twenty-sixth ward. For full particulars, see under New York City Homes, in this division, as it is controlled and supported chiefly by residents of New York city.

BUFFALO — ERIE COUNTY — Buffalo Widows' Asylum, called also St. Mary's Asylum for Widows, Foundlings and Orphans. No. 126 Edward street. (See class V, division 2.)

Charity Foundation of the Protestant Episcopal Church, in the city of Buffalo (The). Incorporated February 28, 1858, under the general statute. Amendatory acts passed April 23, chapter 345, Laws of 1864; March twentieth, chapter 57, Laws of 1875; May twenty-third, chapter 332, Laws of 1878. A home for destitute and aged females was opened in 1858 and an orphan ward in 1866. The present institution was opened in 1878. Northwest corner of Rhode Island and

BUFFALO — (Continued).

Seventh street.—For the relief, shelter, support, education, tion, protection and maintenance of indigent, sick or infirm persons. Destitute orphans and half-orphan children, free from infectious or incurable diseases are received; and indigent, sick or infirm persons making application must present a certificate, testifying as to character and worthiness as an object of charity, and also a physician's certificate, as to the state of health. Controlled by a board of managers. Supported by the interest on endowment fund and by donations. Thomas Lathrop, M. D., president, 154 Delaware avenue; Rev. Charles H. Smith, vice-president, 470 Swan street; Martin Clark, secretary, 77 Park place; Stephen L. Augle, treasurer, 138 Park street. Apply to the executive committee of the board of associate managers, with the approval of the executive committee of the board of managers.

German Evangelical Church Home. Incorporated April 28, 1877, under the general statute. Opened May, 1877. At the junction of Broadway and Genesee streets, Fork's Station, N. Y. C. R. R., town of Cheektowaga.—To receive old, indigent and helpless persons of German birth, and to care for their physical and spiritual necessities. Applicants having means, and belonging to no church, are charged ninety-two dollars per year, and fifty-two dollars per year if they are members of the church; if otherwise, no charge is made. Capacity for forty. Average number of inmates, twenty-two. Twenty beneficiaries last year. Controlled by the board of restitution and by a house father and house mother. Supported by church and voluntary contributions, the proceeds of the farm connected with the home, and by the board of supervisors. Rev. F. Schelle, secretary, 86 Broadway; Wm. Sinsel, secretary, Madison street, near Broadway; Phil. Debus, treasurer, 261 Monroe street. Apply to the president at the home.

Home for the Aged of the Charity Foundation of the Protestant Episcopal Church in the City of Buffalo (which see in this division.)

BUFFALO — (Continued).

Home for the Friendless. Incorporated January 16, 1868, under the general statute. No. 1500 Main street.—To maintain a home for aged females, and to provide a temporary home for respectable and worthy transients, seeking employment, and who are without friends. Permanent inmates admitted for the remainder of their lives on payment of \$250 admission fee, all others are given a home temporarily. Accommodates from fifty to seventy inmates. Average number, fifty-three. One hundred and thirty-seven beneficiaries last year. Controlled by a board of corporators numbering forty ladies, assisted by thirty managers at large. Supported by voluntary contributions, given on the annual donation day. Mrs. F. H. Root, president, 632 Main street; Mrs. J. C. Bryant, first vice-president, 475 Franklin street; Mrs. W. C. C. Wyckoff, second vice-president, 485 Main street; Miss Grace E. Bird, secretary, 1118 Niagara street; Mrs. Parkhurst, treasurer, Delaware avenue; Mrs. James Adams, assistant treasurer, Ferry street. Apply to the executive committee at the home.

St. Francis' Asylum of the City of Buffalo. Incorporated April 30, 1867, under the general statute. Opened October, 1862. No. 337 Pine street.—To provide for and take charge of aged, infirm and destitute persons of both sexes, except such as are hospital cases, without distinction of nationality or religion. Capacity for 300. Average number of inmates, 234. Controlled by the Sisters of St. Francis. Supported by a "pittance" allowed by the county and by the city for those inmates sent by the overseers of the poor, and by the board of those inmates who pay according to their ability. Apply to the sisters in charge at any time.

St. Mary's Asylum for Widows, Foundlings and Orphans. (See under "Buffalo Widows' Asylum," in this class, division 2.)

COOPERSTOWN — OTSEGO COUNTY.—Orphan House of the Holy Saviour. (See class V, division 2.)

COHOES — ALBANY COUNTY.—Home for Aged Women of Cohoes, New York. Incorporated July 24, 1893, under the

COHOES — (Continued).

general statute.—For the relief, care, culture and support of needy or distressed old women of said city of Cohoes. Controlled by a board of seventeen trustees. No information received.

ELMIRA — CHEMUNG COUNTY.—Home for the Aged. Incorporated June 18, 1874, under the general statute. Opened September 16, 1880. Central avenue.—To furnish relief and a home for destitute, aged men and women, and for no other purpose whatever. Applicants, who are admitted on probation for six months, must have been residents of Chemung county for five years preceding date of application, must also be over 60 years of age, and by the payment of admission fee of \$200, they will be cared for till death and be given respectable burial. Persons may be admitted as boarders, when satisfactory guarantee or security is given for payment of board. Capacity for twenty-five. Average number of inmates, twenty-four. Controlled by board of twenty-one managers. Supported by voluntary contributions, admission fees and entertainments. Mrs. George W. Hoffman, president, 603 Hoffman street; Mrs. N. S. Thomas and Mrs. J. I. Nicks, vice-presidents; Mrs. Edward M. Hoffman, secretary, Clinton street; Mrs. C. Preswick, treasurer, South Main street. Apply by mail or in person at any time to any member of the board.

GENEVA — ONTARIO COUNTY.—Church Home of Geneva on the Foster Swift Foundation. Incorporated April 27, 1878, under the general statute. Opened in November, 1879. Corner of Pulteney and High streets.—To provide maintenance for aged, infirm and indigent persons, and to carry out such other branches of charitable work as may hereafter be deemed expedient. Maintains also a hospital department for the sick. The case of each applicant is considered on its own merits as to worthiness, etc. but residents of Geneva, making application are given the preference. Capacity for twelve in the home, independent of hospital accommodation. Average number of inmates, eleven. Con-

GENEVA — (Continued).

trolled by a board of trustees. Supported partly by endowment and by voluntary subscriptions. Rev. H. W. Nelson, president; Rev. James Rankine, D. D., vice-president; A. P. Rose, secretary; P. Richards, treasurer, all of Geneva. Apply to the committee on admissions at the home in person or by letter.

GLOVERSVILLE—FULTON COUNTY.—Nathan Littauer Hospital Association. (See class VII, division 1.)

HOMER — CORTLAND COUNTY.—Cortland County Home for Aged Women. Incorporated September 11, 1891, under the general statute. Opened May 1, 1892.—To provide a home for aged and indigent women of good moral character, also women in search of employment, regaining a temporary home and willing to conform to the rules of the family. Applicants for a permanent home must be over 60 years of age, and must have been bona fide citizens of the county for at least one year preceding date of application. Capacity for twelve. Controlled by a board of twenty-four managers, including the board of trustees. Supported by membership fees and voluntary contributions. Mrs. E. S. Newton, president; Mrs. Jane A. Murray, vice-president; Mrs. Florence Maxon, secretary; Augustus H. Bennett, treasurer, all of Homer. Apply for admission to the president or treasurer, or to the committee on admission.

HUDSON — COLUMBIA COUNTY.—Home for the Aged. Incorporated May 2, 1883. Corner Union and Fifth streets. For further information apply to the superintendent. No answer received.

Volunteer Firemen's Home Association of the State of New York (The). Incorporated June 5, 1890, under the general statute.—To erect and maintain an institution under the name of "The Volunteer Firemen's Home Association of the State of New York," for the

HUDSON — (Continued).

relief, maintenance, support and protection of meritorious invalid or disabled persons who have served or who may hereafter serve as a volunteer fireman in any of the fire departments within the State of New York; the business of the association to be transacted in the city and county of Albany. Applicants must give satisfactory proof of their service in the fire departments, of their sickness or disability contracted therein, and the need of the benefits of the home from inability to be self-supporting, or having no relatives who are willing to maintain them. Capacity of home for 200 inmates. Controlled by a board of trustees. Supported by voluntary contributions from the volunteer and exempt firemen of the State. George W. Anderson, president, Brooklyn; George W. Irish, secretary, Cazenovia. The other trustees are as follows: John Courtney, Brooklyn; Edmund Stephenson and John H. Waydell, New York city; Roswell P. Flower, Watertown; Smith M. Weed, Plattsburgh; Joseph E. Eggleston, Cortland; Lewis E. Griffith and Orange S. Ingram, Troy; James A. Taggart, Buffalo; Chas. S. Rogers, Hudson; Edward Wemple, Fultonville; Elliot Danforth, Bainbridge, all of New York State. Apply in person or in writing to any of the trustees.

ITHACA — TOMPKINS COUNTY.—Ladies' Union Benevolent Society. (See class V, division 2.)

KING'S PARK — SUFFOLK COUNTY (L. I.).—Society of St. Johnland here maintains its Homes. (See under New York Homes for Children, class V, division 2.)

KINGSTON — ULSTER COUNTY.—Industrial Home of the City of Kingston. (See class V, division 2.)

LANSEINGBURGH—RENSSELAER COUNTY.—Deborah Powers Home for Old Ladies. Incorporated May 28, 1885, under the general statute. Opened in December, 1883. No. 819 Third avenue.—For the care and maintenance of respectable and

LANSINGBURGH — (Continued).

worthy aged, indigent and infirm women, unable to support themselves without aid. Invalids requiring hospital treatment are not received. Capacity for twelve. Average number of inmates, ten. Controlled by a board of trustees. Supported by the interest of endowment conveyed to the trustees by Mrs. Deborah Powers. Albert E. Powers, vice-president; Everett Case, secretary; Henry L. Lamb, treasurer; Mrs. Jacob Lansing, matron, all of Lansingburgh. Apply in writing to the trustees at the home.

MIDDLETOWN — ORANGE COUNTY.—Old Ladies' Home. No answer has been received from the officers.

MOUNT VERNON — WESTCHESTER COUNTY.—Old Ladies' Home (The). Incorporated in 1891. No information has been received for the directory.

NEW BRIGHTON — RICHMOND COUNTY (S. I.).—Sailors' Snug Harbor. (See under New York Homes, in class IV, division 3.)

NEWBURGH — ORANGE COUNTY.—St. Luke's Home and Hospital of Newburgh and New Windsor. No. 153 Liberty street. (See class VII, division 1.)

NEW YORK CITY.—An Association for the Relief of Respectable Aged, Indigent Females in the City of New York. Incorporated by special act, March 10, 1815, chapter 69, Laws of 1815. Amendatory acts: Chapter 308, Laws of 1830; chapter 257, Laws of 1849; chapter 382, Laws of 1860; chapter 328, Laws of 1868; chapter 116, Laws of 1878; chapter 224, Laws of 1885; chapter 88, Laws of 1889. Asylum, Amsterdam (Tenth) avenue and One Hundred and Fourth street.—Maintains a home for gentlewomen of the class indicated in title. Applicants must be over 60 years of age, and must have lived in New York city for ten consecutive years, and have satisfactory testimonials as to character and conduct. No foreigners received, who have not been in this country twenty

NEW YORK CITY — (Continued).

years. Admission fee is \$200, and all real and personal property must be made over to the association, which, after the death of the inmate, reverts to the same. Average number of inmates ninety-five, with about 120 outside pensioners.. Controlled by a board of managers. Supported by voluntary contributions and the interest of permanent fund. Mrs. S. A. Church, first directress, 178 Madison avenue; Mrs. F. V. Hamlin, second directress; Miss M. G. Janeway, recording secretary, 67 West Thirty-eighth street; Mrs. T. P. Fowler, corresponding secretary, 39 East Sixty-eighth street; B. F. Dunning, treasurer, —————; Mrs. A. B. Wetmore, assistant treasurer, 6 East Fifty-eighth street; Mrs. W. Wheeler Smith, registrar. Apply to the committee for receiving applications, at 11 a. m., the third Thursday of each month from October to May, inclusive.

Baptist Home Society of the City of New York. Incorporated March, 1869. (Formerly the "Ladies' Home Society of the Baptist Churches of the City of New York;" title changed April, 1886.) In Sixty-eighth street, between Park and Lexington avenues.—Maintains the Baptist Home for Aged and Infirm Persons (opened in 1869), to provide a comfortable residence, with board, clothing and skillful medical attendance, with their accustomed religious exercises, for the respectable aged, infirm or destitute members of the Baptist churches of the city of New York, who must be over 60 years of age and have no means of support, and come recommended by the pastor and deacons of the church to which they belonged, and with which they must have been connected for five years at least previous to their application. An admission fee of \$100 is required, except in special cases, and a transfer of all property must be made to the home. Capacity for, and average number of inmates, ninety. No hospital cases, feeble-minded or colored persons received. Controlled by a board of trustees. Supported by voluntary contributions, subscriptions and entrance fees. Mrs. T. R. Butler, first directress, 433 Fifth avenue; Mrs. S. M. Ambler, second

NEW YORK CITY — (Continued).

directress, 107 East Fifty-seventh street; Mrs. J. M. Bruce, third directress, 12 East Forty-first street; Mrs. H. T. Hanks, secretary, 766 Madison avenue; Mrs. O. D. Baldwin, corresponding secretary, 33 West Thirty-eighth street; Mrs. Lucius H. Niles, treasurer, 170 West Fifty-ninth street. Apply to any of the managers, or to the committee on admissions, at the home.

Baptist Ministers' Home Society of New York. Incorporated December 20, 1882, under the general statute. Amendatory act passed October 13, 1884. The Baptist Ministers' Home of New York was opened November, 1883, at 2020 Vyse street, West Farms.—To provide for disabled Baptist ministers and missionaries, their dependent families, widows of ministers and missionaries, and the dependent infant orphans of Baptist ministers and missionaries in the States of Connecticut, New York or New Jersey, during the time of their disability, with a comfortable home, and the necessities of life, together with medical attendance, and in case they shall die while inmates of the home, with respectable burial. And, further, to receive and disburse such sums of money or property as may by the donors be designated for that purpose, to the parties heretofore named, according to their necessities, instead of maintaining them at the home, which shall be known as "The Baptist Ministers' Home of New York." Applicants must have served actively ten years in the Baptist ministry, or be the widows of such, and missionaries must have been disabled while in actual service. Admission fee, \$100 for an adult, or \$150 for man and wife, who must surrender all title to property to the trustees of the home. Baptist ministers, temporarily disabled, are boarded at reasonable terms. Under peculiar and distressing circumstances, the trustees may, at their discretion, admit applicants, residents of other States than those named in the constitution, to the benefits of the home. Capacity for ten. Average number of inmates, five. Last year there were fifteen beneficiaries. Controlled by a board of trustees.

NEW YORK CITY — (Continued).

Supported by voluntary contributions. Rev. W. C. Bitting, president, 27 East One Hundred and Twenty-seventh street; Rev. G. W. Nicholson, secretary, 10 West Hamilton place, Jersey City, N. J.; Wm. H. Palmer, treasurer, 12 Broadway; Rev. N. W. Miner, D. D., corresponding secretary, financial agent and superintendent, West Farms. Apply for a blank furnished by the treasurer, to be filled and forwarded to the committee on applications at the home.

Chapin Home for the Aged and Infirm. Incorporated by special act, chapter 461, Laws of 1869. Opened March, 1872. Sixty-sixth and Sixty-seventh streets between Lexington and Third avenues.—To provide a home and support for worthy, aged and infirm men and women, except colored, in reduced circumstances, irrespective of creed, over 65 years of age, residents of New York city, and who have no family or friends who are able or willing to care for them. Applicants are excluded whose mental condition is affected. An admission fee of \$300, a physician's examination fee of five dollars, and a burial fee of fifty dollars are required, and all property must be surrendered to the home. Capacity for sixty-five. Average number of inmates, fifty-eight. Persons are occasionally received as boarders at five dollars per week. Controlled by a board of trustees. Supported by donations, legacies, entrance fees and annual subscriptions. Mrs. C. H. De Lamar, president, 424 West Twentieth street; Mrs. W. A. Conover, recording secretary, 324 West Nineteenth street; Mrs. E. T. Sherman, corresponding secretary, 114 West Forty-fourth street; Mrs. S. E. Youmans, treasurer, 180 West Fifty-ninth street. Apply for admission to the committee on applications, through the matron, before the second Wednesday of each month.

Colored Home and Hospital. Incorporated by special act, May 8, 1845. Amendatory act passed April 13, 1872. Change of name from "Colored Home" to above title, authorized by Supreme Court June 16, 1882. Opened in 1839. First ave-

NEW YORK CITY — (Continued).

nue and Sixty-fifth street.—To provide for the support and comfort of infirm and destitute colored persons, of both sexes, and for incurables; also a hospital for general diseases, and a lying-in hospital. Capacity for 300. Average number of inmates, 245. Last year 773 were cared for. Colored residents of the city, unable to support themselves must apply to the superintendent of the Outdoor Poor, of the Department of Charities and Correction, which provides for their maintenance in the home and hospital. Those patients able to pay, and all non-residents, must pay quarterly in advance and give security, all admissions being subject to the approval of the superintending physician. Controlled by a board of managers. Supported by voluntary subscriptions and donations, by pay of patients, monthly revenue from the commissioners of public charities and correction, and by interest on invested funds. Miss Mary W. Booth, first directress, Englewood, N. J.; Mrs. W. E. Dodge, second directress, 225 Madison avenue; Mrs. Everett Herrick, corresponding secretary, 126 Madison avenue; Miss S. R. Whitehall, recording secretary, 607 Lexington avenue; Mrs. James B. Colgate, treasurer, Yonkers. Apply to Thos. W. Bickerton, M. D., superintending physician, or to Wm. Blake, superintendent of outdoor poor, corner of Third avenue and Eleventh street, at any time.

Gallaudet Home for Aged and Infirm Deaf-Mutes of the "Church Mission to Deaf-Mutes." Situated at Hamburg-on-the-Hudson (P. O. Wappingers Falls). (See class VI, division 2.)

German Masonic Home of the German Masonic Temple Association of the City of New York. Incorporated by special act, chapter 192, Laws of 1880, and the amendatory act, chapter 400, Laws of 1889. Office at No. 220 East Fifteenth street. The Home, which has not a separate charter, was opened October 24, 1888, at Tappan, Rockland county.—The object of this corporation is "To take and hold suitable grounds and buildings, or to erect on such grounds a suitable building

NEW YORK CITY — (Continued).

or buildings, and furnish the same for the use and accommodation of the Masonic fraternity in said city of New York, and out of the net profits derived from the rents and income thereof, or from other sources, to build, establish and maintain an asylum or asylums for the support or relief of worthy indigent Masons, their widows and orphans." Aged German Masons, over 60 years, or widows, over 55 years, in good standing, of good moral character, and good health are received. Capacity for thirty-five. Average number of inmates, seventeen. Controlled by a board of directors. Supported by rents from the temple, donations and voluntary contributions. Chas. Boss, president, 161 East Eighty-second street; Albert Wagner, secretary, 21 Grove street; Henry Breunich, financial secretary, 315 Stanton street; Jacob Eidt, treasurer, 850 Second avenue. Apply at the office of the association, 220 East Fifteenth street.

German Odd Fellows' Home Association of New York. Incorporated in 1886, under the general statute.—A benefit and home association at 87 Second avenue. Maintains the German Odd Fellows' Home, opened in April, 1887, at Unionport, Van Nest Station, Westchester county, for the support and care of aged, indigent German members of the Order of Odd Fellows in good standing, their widows and families, and also an orphanage for children of deceased members. Male applicants must be over 60 years of age and female applicants over 55 years of age. Capacity of home for sixty. Average number of inmates, thirty-six. Controlled by a board of managers. Supported by voluntary contributions of the various lodges and of individuals. Hugo H. Hoenack, president; John W. Meyer, vice-president; Frank Machauer, secretary, 87 Second avenue; Charles Kiehl, treasurer; C. Hogrefe, superintendent. Apply to the board of managers through the lodge to which the applicant belongs.

Home for Aged and Infirm Hebrews of New York. Incorporated December 24, 1872, under the general statute. Amending acts passed November 19, 1878, and May 10, 1890.

NEW YORK CITY — (Continued).

Opened May 24, 1870. No. 125 West One Hundred and Fifth street, near Columbus avenue.—To maintain a home for aged and infirm persons of both sexes of the Jewish faith, over 60 years of age and residents of New York for over five years, and also for the purpose of relieving all deserving Jewish applicants who may be considered by its officers to be worthy of the society's bounty. Persons with chronic diseases are not admitted. Capacity for 170. Average number of inmates, 145. Controlled by a board of trustees. Supported by voluntary contributions and dues of members. Charles L. Bernheim, president, 12 East Sixty-fifth street; Mrs. Henry Gitterman, vice-president, 21 East Forty-ninth street; Jacob L. Cohn, secretary; Charles Sternbach, treasurer, 474 Broadway; Mr. and Mrs. M. H. Helm, superintendents. Apply for admission by letter to the executive board at the home, as above.

Home for Aged and Infirm of the "Independent Order Benai Berith, District Grand Lodge No. 1, which see in this division.

Home for Incurables. Third avenue, corner of East One Hundred and Eighty-second street, Fordham. (See class VII, division 2.)

Home for Old Men and Aged Couples. Incorporated under general statute, December 14, 1872. Opened, —————. Nos. 487 to 491 Hudson street.—To provide for the temporal and spiritual welfare of those especially named in title who, having been accustomed to the comforts of life, through loss of property or other causes, find themselves in their old age without means of support, and all religious teachings and exercises shall be in accordance with the doctrines, discipline and worship of the Protestant Episcopal Church, except at the discretion of the trustees. An admission fee of \$250 is required for each beneficiary who may remain for life in the home. Capacity for thirty-four. Last year there were twenty-six inmates. Controlled by a board of trustees comprised of twenty-one or less clergymen or laymen, residents of New York city. Supported by voluntary contributions and interest of permanent fund. Rt. Rev. Henry C. Potter, D. D., president,

NEW YORK CITY — (Continued).

160 West Fifty-ninth street; Rev. Isaac H. Tuttle, D. D., vice-president, 218 West Forty-sixth street; Henry L. Morris, secretary, 490 Mott avenue; Hermann H. Cammann, treasurer, 43 West Thirty-eighth street. Apply to Mrs. Beekman de Peyster, chairman of the committee on admission at the home,

Home for the Aged of the Church of the Holy Communion. Incorporated, 1872, under the general statute. Opened in 1869 at No. 330 Sixth avenue.— To provide and sustain a home for aged Christian women, not chronic invalids, communicants of the Protestant Episcopal Church, particularly those of the Church of the Holy Communion. Capacity for and average number of inmates, twenty-five. Controlled by the Sisters of the Holy Communion and a board of trustees. Supported by subscriptions and donations. Mrs. Francis Delafield, president; James K. Gracie, secretary, Oyster Bay, L. I.; Chas. W. Ogden, treasurer, 31 West Twentieth street. Apply to the sister in charge at the home.

Home for the Aged of the Little Sisters of the Poor of the city of New York. Incorporated,——, 1871, under the general statute. Opened September 29, 1871. Home for applicants from the east side of the city at Nos. 205 to 217 East Seventieth street; branch home for applicants from the west side, No. 135 West One Hundred and Sixth street.— To provide a home for the worthy destitute, aged and helpless of both sexes, over 60 years of age, irrespective of creed. No person of unsound mind, or persons having means to procure a shelter are received. Admission free. Capacity for 500. Average number of inmates, 490. Controlled by the Little Sisters of the Poor. Supported by charitable contributions. Sister Gabriel of St. Augustin, President; Sister Isabella, vice-president; Sister Romaine Marie, secretary; Sister Mary Melaine, treasurer. Apply to the Mother Superior of each home any day, at any hour.

Home Hotel Association. St. Ann's avenue and One Hundred and Thirty-fifth street. (See class IV, division 3.)

NEW YORK CITY — (Continued).

House of the Holy Comforter, Free Church Home for Incurables. No. 149 Second avenue. (See class VII, division 2.)

Independent Order Benai Berith, District Grand Lodge, No. 1. Incorporated by special act, passed April twenty-seventh, chapter 188, Laws of 1878. Amendatory act passed February twelfth, chapter 100, Laws of 1885. Organized in 1843. Third avenue, corner of Fifty-seventh street.—For the cultivation and promotion of charity and benevolence and moral, mental and social culture among its members, their mutual benefit in case of sickness and distress, and provision for their widows and orphans by means of endowments, and to provide a proper edifice or edifices in which members of the Independent Order of Benai Berith, or any of their families, who through protracted illness, old age, or extraordinary occurrences have become unable to work and to gain a livelihood, and their orphan children, may find a home and an asylum. For these objects, the District Grand Lodge, No. 1, maintains the "Home for Aged and Infirm," opened in June, 1882. Riverdale avenue, Valentine Lane, Yonkers, Westchester county. For aged and infirm members and their wives or widows over 60 years, who from protracted illness, old age or other legitimate causes, are unable to gain a livelihood. Applicants suffering from diseases incident to old age are admitted, but those afflicted with incurable, chronic, insane, consumptive or contagious diseases are excluded. Capacity for 125. Average number of inmates, sixty. The home is controlled by a board of twenty-one governors, members of the grand lodge. Supported by annual dues of members, bequests and by voluntary contributions. Moses S. Hyman, president, 429 East Fifty-eighth street; Raphael Ettinger, vice-president, 1451 Lexington avenue; S. Hamburger, secretary, 222 East Fifty-eighth street; N. Sonneberg, treasurer, 168 First avenue. Apply to the board of governors any day at the home, Yonkers, accompanied by a recommendation from the lodge to which the applicant belongs.

Isabella Heimath. Incorporated by special act, chapter 73, Laws of 1889. Organized in 1875, as "The Isabella Home

NEW YORK CITY — (Continued).

Society." Opened in November, 1889. Amsterdam avenue and One Hundred and Ninetieth street.—To admit, maintain and care for the aged and the sick, without regard to creed, sex or nationality. The Home Department is for indigent persons of both sexes over 60 years of age unable to support themselves and who have no children or near relatives legally bound to provide for them. Is also a Hospital and Dispensary for chronic invalids and for convalescents, but consumptives, epileptics, idiots, patients afflicted with contagious diseases and totally blind persons not received. Admission free; no entrance fee nor any weekly or monthly payment is required. Capacity, 175 beds, of which 156 are free. Average number, 124. Any qualified person deemed worthy is taken free of charge. Application to the convalescent wards must be made during their office hours to a member of the consulting board of physicians. Controlled by a board of managers. Supported by the interest of a permanent fund, by annual dues of members and donations. Oswald Ottendorfer, president, 7 East Seventeenth street; R. Vander Ende, secretary, 323 Bowery; John F. Pupke, treasurer, 103 Warren street; J. Wm. Meyer, superintendent, at the home. Applications to the home department and hospital for chronic invalids must be made to the committee on admission, care of the German Society of the City of New York, No. 13 Broadway, every Friday from 2 to 3 p. m.

Italian Home (Istituto Italiano). No. 179 Second avenue. (See class III, division 8.)

Mariners' Family Asylum, Port of New York. (See under Stapleton, Richmond county, S. I., in this division.)

Methodist Episcopal Church Home, in the City of New York. Incorporated by special act, June 19, 1851. Amendatory act passed March 25, 1878. Opened in 1850. Amsterdam avenue, between Ninety-second and Ninety-third streets.—To care for aged and infirm members of the Methodist Episcopal Church, in New York city, whose circumstances require such aid, with medical and other necessary assistance, and religious

NEW YORK CITY — (Continued).

privileges. Applicants must come recommended by the board of stewards and pastor of the church to which they are attached, as members of the Methodist Episcopal Church for ten years and of a city church for five years, and who have no means of support or relatives to provide for them. No admission fee is required. All articles brought in to the home become public property, and applicants having money or property must secure the same to the institution. Capacity for 150. One hundred and thirteen inmates last year. Controlled by a board of managers and an advisory board. Supported by voluntary contributions, annual subscriptions, bequests and entertainments. Mrs. Lemuel Bangs, president, 313 East One Hundred and Twenty-fifth street; Mrs. Lafayette Olney, vice-president, 130 West One Hundred and Thirtieth street; Mrs. H. J. Heydecker, recording secretary, East Orange, N. J.; Mrs. Geo. H. Morrison, corresponding secretary, 224 West Thirty-eighth street; Mrs. M. S. Rogers, treasurer, 46 West Fifty-first street. Apply to the board of managers at the regular monthly meetings, held the first Friday in each month, at 11 a. m.

Miriam Osborne Memorial Home Association. Incorporated by special act, January, chapter 94, Laws of 1892.—For the founding of a memorial home for respectable aged women in needy circumstances. The institution is not built yet nor the location definitely decided. It is expected to commence work on the home during the fall of 1893. Controlled by a board of trustees. To be supported by endowments. The trustees are as follows: Wm. C. Whitney, Frederic C. Olcott, Jacob Halstead, Edwin Howell, Zelah, Van House, Chauncey M. Depew, Wm. Steinway, Wm. Thorne, George H. Church, J. Hugh Peters, Cornelius N. Bliss, John W. Sterling, Samuel Thorne, Henry E. Owen and James D. Bloss. John W. Sterling, secretary, to whom apply at 45 William street.

Montefiore Home for Chronic Invalids. West Boulevard, between One Hundred and Thirty-eighth and One Hundred and Thirty-ninth streets. (See class VII, division 2.)

NEW YORK CITY — (Continued).

National Homes for Disabled Soldiers. Office of board of managers, No. 39 Park row. (See class II, division 3.)

Peabody Home and Reform Relief Association. Incorporated July 22, 1874, under the general statute. Better known as "The Peabody Home for Aged and Indigent Women." Opened in 1874. No. 2064 Boston avenue, corner Clover street.—For the care of indigent old women, over 65 years of age, of sound mind, and residents of New York city or Brooklyn. No colored or invalid women are received. Capacity for, and average number of inmates, twenty-five. Controlled by a board of trustees and a board of managers. Supported by voluntary contributions. Rev. W. S. Rainsford, D. D., president, St. George's church, East Sixteenth street; Walter Watson, vice-president, 12 East Forty-sixth street; Arthur H. Cutler, secretary, 20 West Forty-third street; J. Corlies Lawrence, treasurer, 158 Broadway. Apply for admission by letter to Mrs. J. Corlies Lawrence, secretary of ladies' association, 64 West Forty-sixth street.

Presbyterian Home for Aged Women in the City of New York. Incorporated by special act, April 29, chapter 413, Laws of 1869. Organized April, 1866. No. 49 East Seventy-third street.—To provide a home for aged and infirm female members of the Presbyterian church, residing in the city of New York, who must have been members of the Presbyterian or Reformed Dutch church for three years, and must bring satisfactory proof of their membership by letter from the pastor or elders. Applicants must be 65 years of age (unless in special cases, wherein the board shall decide); they must sign an agreement to pay thirteen dollars a month as part payment for their board, or must provide some responsible party who will sign such an agreement for them. Capacity for, and average number of inmates, forty-five. Controlled by a board of thirty-seven managers. Supported by board of inmates, interest from permanent fund, subscriptions and donations. Miss S. D. Parish, first directress, 2 East Sixteenth street; Mrs. C. F. Griffin, second directress, 40 West

NEW YORK CITY — (Continued).

Fiftieth street; Miss M. S. Wright, secretary, 52 West Eleventh street; Miss L. P. Halstead, financial secretary, 110 East Thirty-seventh street; Miss Rachel L. Kennedy, treasurer, 41 Fifth avenue. Apply by letter to Miss Emily O. Butler, 78 Park avenue, or to Miss M. S. Wright, of 52 West Eleventh street, committee on admissions.

Sailors' Snug Harbor, at New Brighton, (S. I.), Richmond county. (See class IV, division 3.)

St. Joseph's Home for the Aged. Incorporated in 1870, under the general statute, No. 203 to 211 West Fifteenth street.—For respectable indigent, aged and destitute women over 60 years of age. Accommodates 350, of whom about 250 are free inmates, and the rest pay according to their ability. Controlled by and under the care of the Sisters of Charity of St. Vincent de Paul. Supported by voluntary contributions, etc. Apply for admission to the Mother Superior at any time.

St. Luke's Home for Indigent Christian Females. Incorporated January 12, 1854, under the general statute. Opened May 1, 1852. Eighty-ninth street and Madison avenue.—For the care and support of aged, indigent female communicants over 50 years of age, of any of the Protestant Episcopal Churches of New York city contributing to the home. Entrance fee, \$300, and the beneficiary must make over all her property to the home. No persons suffering from consumption or incurable disease received. Capacity for and average number of inmates, sixty-five. Controlled by a board of associate managers, representing the various Protestant Episcopal churches in the city. Supported by voluntary contributions, interest from sustentation fund and entrance fees. Rt. Rev. Henry C. Potter, D. D., president; Rev. Isaac H. Tuttle, D. D., vice-president; Harold F. Hadden, secretary, 109 Worth street; John H. Caswell, treasurer, 87 Front street. Apply to the matron for a blank to be filled and then sent to the committee on applications at the home.

St. Philip's Parish Home. Incorporated July 23, 1872, under the general statute. Opened June 3, 1872. No. 127 West Thirtieth street.—To provide a comfortable home for the aged,

NEW YORK CITY — (Continued).

infirm, and destitute members of St. Philip's Church (Protestant Episcopal), in the city of New York, and for such other persons as the board of managers may choose to accept. All property or personal effects of which the applicant may be possessed, must be made over to the home before they can be admitted. Capacity for twelve. Average number of inmates, eight. Controlled by a board of managers. Supported by voluntary subscriptions. Rev. Hutchens C. Bishop, president, 161 West Twenty-fifth street; Aaron F. Potter, secretary, 213 Sullivan street; Mrs. Cornelia A. Guignon, treasurer, 192 South Second street, Brooklyn. Apply by letter to the executive committee of the board at the home.

Samaritan Home for the Aged of the City of New York. Incorporated by special act, March 23, 1867. Opened in 1866. No 414 West Twenty-second street.—To provide a permanent home for aged, friendless and indigent persons, of good character of both sexes, over 65 years of age, and of all Protestant denominations, provided they have proved themselves incapable of self-support, and have no relatives who are able to take care of them. An admission fee of \$250 is charged, as a contribution towards the maintenance of a common home. Capacity for forty-two. Average number of inmates, forty. Last year forty-five were cared for. Controlled by a board, who are as far as practicable, representatives of different Protestant denominations. Also by an advisory committee of gentlemen. Supported by voluntary contributions, admission fees and legacies. Mrs. James Hurry, president, 1507 Broadway; Mrs. C. L. Perkins, vice-president; Mrs. Kinnicutt, secretary, 42 West Thirty-seventh street; Mrs. Richard Irwin, financial secretary, 12 West Thirty-sixth street; Howland Davis, treasurer, 51 Nassau street; Miss Margaret Middleton, assistant treasurer, 53 West Nineteenth street. Apply to the committee on admissions at the home.

Society of St. Johnland. Homes are situated at Kings' Park, Suffolk county (L. I.). (See class V, division 2.)

Swiss Home of the Swiss Benevolent Society. No. 108 Second avenue. (See class III, division 8.)

NEW YORK CITY — (Continued).

Trinity Chapel Home. No. 221 West Twenty-fourth street.—
For aged women, communicants of the church. Capacity for fifteen.

Trustees Masonic Hall and Asylum Fund. Masonic Hall.
Sixth avenue and Twenty-third street. (See class V, division 2.)

Wartburg Home for Aged and Infirm, at Brooklyn, Kings county. Incorporated May 29, 1878, under the general statute. Opened November 20, 1876. Fulton extension between Georgia and Sheffield avenues (Twenty-sixth ward).—A society of members of the Lutheran church, maintains an asylum or home for aged and infirm persons, over 65 years of age (Germans and Lutherans being preferred), recommended by some responsible member as being worthy of such assistance. No sick person received. Admission fee required, if able to pay. Capacity for seventy-four. Average number of inmates, seventy. Controlled by the board of trustees and the house committee. Supported by the annual subscriptions of members, by admission fees and by voluntary contributions. C. Bellmer, president, Hudson avenue, New York city; E. Hauselt, vice-president, 220 East Eighty-sixth street, New York city; Rev. E. Bohm, secretary, 341 East Eighteenth street, New York city; E. M. Korner, treasurer, 25 Tenth avenue, New York city. All applications must be made to the secretary at any time.

OGDENSBURGH — ST. LAWRENCE COUNTY.—Ogdensburgh City Hospital and Orphan Asylum. Incorporated February 20, 1886, under the general statute. Opened in 1885.—To establish a hospital and orphan asylum in said city of Ogdensburgh; to provide a home for indigent aged and infirm persons, and orphans, for the period of ninety-nine years.—For the alleviation of humanity in general, particularly for the aged poor and for orphan children of sound mind. No contagious cases received. Capacity for eighty-five. Average number of inmates, fifty. Last year seventeen aged persons and thirty-five orphans were cared for. Controlled by

OGDENSBURG — (Continued).

a board of managers of the Sisterhood of Grey Nuns. Supported by voluntary contributions. Apply to Sister M. P. Phelan, superior, at any time at the hospital.

OSWEGO — OSWEGO COUNTY.—Home for the Friendless.

Incorporated February 16, 1872, under the general statute. Opened May 2, 1872. Corner of Utica and Third streets.—For the protection and support of worthy aged and needy women, under the regulations of the board. An admission fee of \$200 is required, and the surrender of all property by the applicant to the Home. Capacity for twenty-five. Average number of inmates, seventeen. Controlled by a board of directresses. Supported by donations, admission fees, and by voluntary contributions. Mrs. Theodore Irwin, president; Mrs. Delos De Wolf, vice-president; Mrs. D. L. Couch, recording secretary; Mrs. J. E. Lyon, corresponding secretary; Mrs. M. E. Kingsford, treasurer; all of Oswego. Apply to the committee on application at the home, in person or by letter.

POUGHKEEPSIE — DUTCHESS COUNTY.—Old Ladies' Home

in the city of Poughkeepsie (The). Incorporated December 6, 1870, under the general statute. Opened 1871. South Hamilton street.—For the support of respectable, aged, indigent Protestant women, who are unable to support themselves, and have been actual residents of the city of Poughkeepsie for at least five years next preceding their application. No colored women are received. Admission fee \$100. Capacity for twenty-four. Average number, twenty-two. There were twenty-three beneficiaries in 1891. Controlled by a board of forty-three managers, chosen from seven Protestant churches. Supported largely by a trust fund, by entrance fees and church contributions. Mrs. W. J. Carpenter, president; Mrs. A. H. Champlin, first vice-president; Mrs. C. W. Swift, second vice-president; Miss Mary Moore, third vice-president; Mrs. G. Dudley, recording secretary; Mrs. G. Corlies, corresponding secretary; Mrs. M. Vassar, treasurer; all of Poughkeepsie. Apply to the committee on application at the home.

POUGHKEEPSIE — (Continued).

Gallaudet Home for Aged and Infirm Deaf-Mutes. (See under New York. Class VI, division 2.)

Vassar Brothers' Home for Aged Men in the City of Poughkeepsie. Incorporated December 3, 1880, under the general statute. Southeast corner of Maria and Vassar streets.—For the support of respectable and indigent Protestant men, who are unable to support themselves, and who have been actual residents of the city of Poughkeepsie for at least five years preceding their application. The initiation or admission fee is \$250, for applicants between 65 and 70 years of age; and \$100 if over 80 years of age. Capacity for forty. Average number of inmates and number cared for last year, seven. Controlled by a board of twenty-one trustees. Supported by the income of endowment funds of \$110,000, much of which is not available as yet, because of its being charged with the payment of annuities to certain relatives of the founders, M. Vassar, Jr., and J. G. Vassar, deceased. John F. Hull, president, 112 Academy street; LeGrand Dodge, first vice-president, 143 Academy street; Wm. T. Reynolds, second vice-president, 239 Neill street; Robert E. Taylor, secretary, North avenue; Frederick W. Davis, treasurer, 3 Cannon street. Apply at any time in writing to any of the above named officers.

ROCHESTER — MONROE COUNTY.—Church Home of the Protestant Episcopal Church in the City of Rochester (The). Incorporated September 20, 1869, under the general statute. Opened in November, 1869. No. 239 Mt. Hope avenue.—To provide for the relief, protection and maintenance of indigent or infirm persons, including orphans, or half-orphan children, giving preference to members of the Protestant Episcopal church. No adults shall be received as inmates of the Home unless they have been communicants for two years of the Protestant Episcopal church, and can give satisfactory testimonials of good character. Residents of Rochester shall have the preference, but no person under 60 years is received, unless by special vote of the managers, except when other-

ROCHESTER — (Continued).

wise ordered. An admission fee of \$250 is required, and applicants are received on a probation of three months. All property, furniture, etc., of permanent inmates must be transferred to the institution at the time of admission. Destitute children will be received and unless they are surrendered to the Home a charge of one dollar per week for their board will be made to parent or guardian, who must also furnish necessary clothing. No child or person from out of Monroe county shall be received without payment, except by the unanimous decision of the board. Average number of inmates in the Home, sixty. Controlled by a board of trustees and a board of managers elected from the various Protestant Episcopal churches in Rochester. Supported by voluntary contributions, interest on investments, board of inmates and donations. H. F. Atkinson, president; Rev. Henry Anstice, D. D., vice-president; George H. Humphrey, secretary; and John H. Rochester, treasurer of board of trustees. Mrs. W. L. Halsey, president; Miss M. A. Doolittle, corresponding secretary; Mrs. W. C. Rowley, recording secretary; Mrs. W. S. Dewey, treasurer, of board of managers. Apply to any member of the committee on admissions at their residences.

Rochester Home for the Friendless. Incorporated June 5, 1855, under the general statute. Opened in 1855. East avenue, corner of Alexander street.—The society furnishes a permanent home for aged women, and a temporary home for not more than two weeks for friendless, homeless and virtuous females. Applicants for permanent relief must be of good moral character and habits, over 65 years of age, and residents of Monroe county. Admission fee for women between 65 and 70 years of age, \$250; between 70 and 75 years of age, \$200; over 75 years of age, \$150. Capacity for and average number of inmates, fifty. Controlled by a board of lady managers. Supported by voluntary contributions and endowments. Mrs. S. Porter, president, 37 South Washington street; Mrs. Charles Pond, secretary, Plymouth avenue;

ROCHESTER — (Continued).

Miss Mary Billows, treasurer, "The Jenkinson," Spring street.
Apply at any time to any of the managers.

SARATOGA — SARATOGA COUNTY.—Church Aid of the Protestant Episcopal Church, in the Town of Saratoga (Home of the Good Shepherd). (See class V, division 2.)

SCHENECTADY — SCHENECTADY COUNTY.—Home of the Friendless of Schenectady. Incorporated August 4, 1868, under the general statute. Opened in September, 1868. No. 237 Green street.—To care for the sick and needy and to provide for those who from age, infancy or infirmity shall be unable to provide for themselves. Owing to lack of funds, the benevolent work has been limited to the present time to caring for worthy and respectable aged women of good moral character, of sound mind, residents of Schenectady for one year previous to date of application, and who pay an admission fee of \$100. No contagious or hospital cases are received. Capacity for and average number of inmates, twelve. Controlled by a board of trustees and a board of thirty lady managers. Rev. J. Trumbull Backus, D. D., president; D. Cady Smith, secretary and chairman of executive committee; Edward D. Palmer, treasurer of board of trustees. Apply to the executive committee through any lady manager. Hospital Association of the City of Schenectady. (See class VII, division 1.)

STAPLETON — RICHMOND COUNTY.—Mariners' Family Asylum, Port of New York. Incorporated by special act, April 9, 1843, as the "Mariners' Family Industrial Society." Name changed to present title by special act, April 12, 1854.—For the use and benefit of the destitute, sick or infirm mothers, wives, sisters, daughters or widows of seamen of the port of New York, who are 60 years of age and over. Admission fee, \$100, and an entire surrender of personal effects or property to the asylum is required of inmates. Applicants are admitted, after examination by medical adviser, on probation for six months. Capacity for fifty. Average number of

STAPLETON — (Continued).

inmates, forty-five. This is said to be the only institution of its kind in the United States. Controlled by a board of officers and lady managers with a board of counsel composed of gentlemen. Supported by private contributions, legacies and admission fees. Mrs. H. B. Jackson, honorary president; Mrs. Frances MacDonald, president, Clifton, S. I.; Mrs. Captain G. A. Carver, vice-president, 115 Schermerhorn street, Brooklyn; Mrs. Captain S. Whitman, corresponding secretary, Port Richmond, S. I.; Miss M. C. Rutherford, recording secretary, 38 Ashland place, Brooklyn; Mrs. G. W. Johnson, treasurer, 679 Greene avenue, Brooklyn. Apply to the committee on application, through the matron, by mail or personally, the last Thursday of every month except August, at the asylum.

SYRACUSE — ONONDAGA COUNTY.—Sisters of Charity of the House of Providence. Grand avenue. (See class V, division 2.)

Syracuse Home Association. Incorporated by special act, Laws of 1853. The institution was opened in 1870. Corner of Townsend and Hawley streets.—A home for the protection and relief of virtuous, destitute and unprotected females, particularly old ladies, of good moral character, who are unable to be provided for elsewhere. No paralytic persons received. Capacity for forty-five. Average number of inmates, forty. Controlled by counselors and a board of managers selected from the churches. Supported by endowment fund and board of inmates. Mrs. C. L. Chandlier, president, 619 East Fayette street; Mrs. W. A. Judson, first vice-president; Mrs. J. H. Cobb, second vice-president; Mrs. M. M. B. Fairchild, corresponding secretary, 1500 North Salina street; Mrs. J. W. Eager, financial secretary, 337 West Onondaga street; ———, treasurer. Apply to the receiving committee, appointed by the board of managers, at the home.

TAPPAN — ROCKLAND COUNTY.—German Masonic Home of the German Masonic Temple Association of the City of New York. (See under New York Homes, in this division.)

TROY — RENSSELAER COUNTY.—Church Home of the City of Troy (The). Incorporated by special act, April 17, 1863. Opened in 1854. Northeast corner of Broadway and Seventh street.—For the support or relief of the aged, the sick, the infirm and the destitute. Must be infirm or aged members of the Protestant Episcopal Church in the city of Troy, who, by reason of age, or other cause, are unable to provide for their own maintenance, and who have been a resident in the city for one year previously to date of application. Capacity for eighteen. Average number of inmates, fourteen. An admission fee of \$100 is required for each beneficiary. Controlled by a board of trustees and an auxiliary of ladies. Supported by the charitable contributions. Norman B. Squires president; J. W. A. Cluett, vice-president; Elias G. Dorlon, secretary; ————, treasurer. Apply to and through the rector of one of the parishes of Troy.

Home of the Aged of the Little Sisters of the Poor. Incorporated June 5, 1884, under the general statute. Opened in 1875. Ninth street, East Troy, between Hutton and Hoosick streets.—To maintain a home in which to care and provide for the worthy infirm, destitute, aged poor of both sexes, over 60 years of age, without regard to creed or nationality. Capacity for 250. Average number of inmates, 200. Controlled by the community of sisters. Supported by voluntary contributions. Marie Moreau, Victorine Boulain, Luvidine Emprin, Marie Amisse and Margaret Murphy, officers of the Little Sisters of the Poor, to whom apply with a recommendation of good moral character, in person, at the home at any time.

Presbyterian Home Association of the City of Troy. Incorporated February 1, 1871, under the general statute. Opened in 1870, at No. 90 Fourth street.—For the support of the aged, indigent and infirm females of the Presbyterian Church of the city of Troy, who have no means for self-support, and who have been members in good standing of the Presbyterian Church for at least three years preceding their application. Capacity for fourteen. Average number of inmates, and the

TROY — (Continued).

number cared for last year, twelve. Controlled by a board of lady managers and an advisory board of gentlemen. Supported by voluntary contributions. Miss M. E. Eddy, president, Troy; Mrs. John Burden, vice-president, Troy; Mrs. P. J. March, secretary, Lansingburgh, N. Y.; Mrs. R. H. McClellan, Troy, N. Y. Apply to the president of committee on applications at the home.

UNIONPORT, VAN NEST STATION — WESTCHESTER COUNTY.—German Odd Fellows' Home of the German Odd Fellows' Home Association of New York, (which see under New York homes in this division.)

UTICA — ONEIDA COUNTY.—Faxton Hospital, Perkins avenue, now Sunset avenue. (See class VII, division 1.)

Home for Aged Men in the City of Utica. Incorporated February 13, 1882, under the general statute. Opened in 1878. Sunset avenue.—For the protection, assistance and support, wholly or in part, of respectable, aged, indigent or infirm men, who are unable to protect themselves. Applicants for admission must be men over 65 years of age, of respectable character, in reduced circumstances, furnishing satisfactory testimonials of good character and conduct, and must have been residents of Oneida county for not less than five years preceding date of application. An admission fee of \$250 is required, and a total surrender of all real and personal property to the home by applicant, who is admitted on probation for three months. Aged couples of Oneida county are admitted subject to the same regulations and on payment of \$500. Capacity for fifty. Average number of inmates, thirty-five. Controlled by a board of thirty-five managers. Supported by voluntary contributions, admission fees and interest on endowment fund. Mrs. W. W. Storrs, president, 703 Genesee street; Mrs. J. G. Brown, recording secretary, 255 Genesee street; Mrs. M. H. Thomson, corresponding secretary, 321 Genesee street; Mrs. Edwin Thorn, treasurer, 269 Genesee street. Apply for

UTICA — (Continued).

admission in person or by letter to Mrs. M. H. Thomson, Chairman of the application committee, at 321 Genesee street.

Home for the Homeless in the City of Utica. Incorporated December 8, 1866, under the general statute. Opened December 26, 1870. Faxton street.—For the protection, assistance and support, wholly or in part, of respectable, aged, indigent or infirm women, who are unable to support themselves without assistance. Applicants must be over 60 years of age, and must have been residents of Oneida county for two years next preceding date of application, and an entrance fee of \$150 is required, also the transfer to the corporation of any other property possessed at the time of entrance, and of any sum of money, not exceeding \$1,000, to which the inmate may thereafter become entitled. Capacity for and average number of inmates, sixty. Controlled by a board of trustees, assisted by a board of lady managers. Supported by admission fees, voluntary contributions, etc. P. V. Rogers, president; James H. Williams, vice-president; Edward Curran, secretary, and F. G. Wood, treasurer, of the board of trustees. Mrs. Daniel Crouse, president; Mrs. F. Wardwell, secretary, and Mrs. Edward Curran, treasurer, of the board of managers. Apply at any time in person or by letter to the committee on admissions at the home.

St. Elizabeth's Hospital and Home. No. 172 Columbia street. (See class VII, division 1.)

St. Luke's Home in the City of Utica. Incorporated December 23, 1869 under the general statute.—For the establishing and maintaining in the city of Utica, a refuge for the poor and friendless members of Grace Church Parish, in Utica, and such others as the board of managers may think entitled to its benefits. Controlled by a board of eleven trustees. Apply at the Home.

WAPPINGER'S FALLS, P. O. (HAMBURG-ON-THE-HUDSON)—
DUTCHESS COUNTY.—Gallaudet Home for Aged and

WAPPINGER'S FALLS — (Continued).

Infirm Deaf-mutes of "The Church Mission to Deaf-mutes."
(See under New York, class VI, division 2.)

WATERFORD — SARATOGA COUNTY — Old Ladies' Home.—

A private home for aged women, supported by private income.

WATERTOWN — JEFFERSON COUNTY.—Henry Keep Home.

Incorporated by special act, March eleventh, chapter 77, Laws of 1879. Opened January 1, 1884.—To provide a home and support for worthy destitute aged men and women, also for children. An admission fee of \$250 for an adult male applicant, and \$150 for an adult female applicant is required. Capacity for fifty or sixty. Average number of inmates, forty. Controlled by a board of trustees. Supported by rents of business buildings in the city owned by the institution. Mrs. Emma Keep Schley, president, New York city; Allen C. Beck, vice-president and treasurer, Watertown; Silas S. George, secretary, Watertown. Apply for admission by letter or in person to any of the trustees.

WATERVLIET — ALBANY COUNTY.—Home for Aged Men

(The). Incorporated October 5, 1876, under the general statute. Opened March, 1878. Watervliet Turnpike, town of Watervliet, Albany county.—For the relief and care of worthy and needy Protestant old men whose poverty is the result of misfortune rather than of vice or extravagance. Non-residents, alien and intemperate applicants are not admitted. Capacity for fifty. Average number of inmates, thirty. Controlled by a board of trustees. Supported by voluntary contributions. Maurice E. Viele, president; J. H. Tillinghast and James H. McClure, vice-presidents; David A. Thompson, secretary; Dudley Olcott, treasurer, all of Albany. Apply to the board of trustees in writing at any time.

YONKERS — WESTCHESTER COUNTY.—Home for the Aged and Infirm of "The Independent Order Benai Berith, District Grand Lodge, No. 1. Riverdale avenue. (See under New Homes in this division.)

DIVISION 4.—POOR-HOUSES. — See also Alms-Houses

There are fifty-eight county poor-houses and alms-houses in the State, including New York and Kings counties, located as follows:

ALBANY COUNTY — ALBANY.— Albany County Alms-house or Poor-house. Opened —————. — Provides a home for the homeless, residents in Albany county. Insane persons and children, between 2 and 16 years of age are not admitted. Capacity for 200. Average number of inmates, 130. Controlled by the mayor and common council. Supported by appropriations from the board of supervisors. John McKenna, Superintendent of Poor, City Building; Wm. T. Gorman, deputy superintendent, 276 Madison avenue; E. F. Brennan, clerk, 803 Madison avenue. Apply to the overseers of poor of each town and city in the county.

Allegany County Poor-house, Angelica.

Broome County Alms-house, Binghamton.

Cattaraugus County Poor-house, Machias.

Cayuga County Poor-house, Sennett (three miles from Auburn).

Chautauqua County Poor-house, Dewittville.

Chemung County Poor-house, Breesport.

Chenango County Poor-house, Preston.

Clinton County Poor-house, Beekmantown.

Columbia County Poor-house, Ghent.

Cortland County Poor-house, Homer.

Delaware County Alms-house, Delhi.

Dutchess County Poor-house, Oak Summit; City Alms-house at Poughkeepsie.

Erie County Poor-house, Buffalo Plains. The Hospital and Insane Asylums. Amendatory acts, chapter 461, Laws of 1867; chapter 363, Laws of 1880. Opened in January, 1829. Buffalo Plains, Main street, six miles from the city and county hall.—For the support, care and treatment of the indigent, chronic sick, and of the indigent, chronic insane of Erie county, who are received upon a warrant of the superintendents of the poor of Erie county, the overseer of the poor of the city of Buffalo, or town overseers of the poor and magistrates, and

ERIE COUNTY POOR-HOUSE — (Continued).

in cases of insanity, accompanied by a certificate from two examiners in lunacy, approved by the county judge. Capacity for 850 in all the buildings. Average number of inmates, 756. Controlled by the Erie county board of supervisors. Supported by a county tax. John A. Stengel, keeper; Chas W. Winspear, deputy keeper; Wm. V. Miller, M. D., superintendent of the insane asylum; Jacob Miller, M. D., resident physician.

Essex County Poor-house, Whallonsburg.

Franklin County Poor-house, Malone.

Fulton County Poor-house, Gloversville.

Genesee County Poor-house, Linden.

Greene County Poor-house, Cairo.

Hamilton county, no poor-house.* (Note.—Provides for its poor in institutions of other counties or in family homes.)

Herkimer County Poor-house, Middleville.

Jefferson County Alms-house, Watertown.

Kings County Alms-house, Flatbush, Brooklyn; City Alms-house, Brooklyn.

Lewis County Poor-house, Lowville.

Livingston County Poor-house, Geneseo.

Madison County Poor-house, Eaton.

Monroe County Poor-house, Rochester.

Montgomery County Poor-house, Fultonville.

New York City Alms-house, Blackwell's island. (See Department of Public Charities and Correction, class II, division 2. and division 1 in this class.)

Niagara County Poor-house, Lockport (about three miles from Lockport.)

Oneida County Poor-house, Rome; City Alms-house at Utica.

Oneida County Asylum and Poor-house. Opened ——— For the care of the indigent and poor and insane of Oneida county, who are unable to provide for themselves. Capacity for 600. Average number of inmates, 550. Controlled by the superintendent of the poor of the county, and supported by a county tax. David Addridge, superintendent of the poor, to whom apply, or to the overseers of the poor in the several towns of the county.

ONONDAGA COUNTY — ONONDAGA HILL (near Syracuse) —

Onondaga County Poor-house. Opened in 1827.—For the relief of the worthy poor, who by reason of physical disability or old age are unable to care for themselves, and are entitled to relief. Capacity for 325. Average number of inmates, 225. Under the control of the superintendent of poor, and supported by the county. John Q. Fellows, superintendent, to whom apply, or to the town or city overseers of poor.

Ontario County Poor-house, Canandaigua.

Orange County Poor-house, Durlandville, City Alms-house at Newburgh.

Orleans County Poor-house, Albion.

Oswego County Poor-house, Mexico; City Alms-house at Oswego.

Otsego County Poor-house, Cooperstown.

Putnam County Poor-house, Carmel.

Queens County Poor-house, Rockville Centre, Town Poor-houses at Hempstead and Glen Head.

Rensselaer County Poor-house, Troy.

Richmond County Poor-house, New Dorp.

Rockland County Poor-house, Monsey.

St. Lawrence County Alms-house, Canton.

Saratoga County Poor-house, Ballston.

Schenectady County Poor-house, Schenectady.

Schoharie County Poor-house, Middleburgh.

Schuyler county, no poor-house. (Note.—Provides for its poor in institutions of other counties or in family homes.) Town Poor-houses at Watkins and Reynoldsville

Seneca County Alms-house, Seneca Falls.

Steuben County Poor-house, Bath.

Suffolk County Alms-house, Yaphank.

Sullivan County Poor-house, Monticello.

Tioga County Poor-house, Owego.

Tompkins County Poor-house, Jacksonville.

Ulster county Poor-house, New Paltz; City Alms-house at Kingston.

Warren County Poor-house, Warrensburgh.

Washington County Poor-house, Argyle.

Wayne County Poor-house, Lyons.

Westchester County Poor-house, East View.

Wyoming County Poor-house, Varysburgh.

Yates County Poor-house, Penn Yan.

CLASS VI.

ASYLUMS AND RELIEF FOR THE DEFECTIVE AND THE AFFLICTED.—Including the Blind, Deaf-Mutes, Crippled, Feeble-Minded and Insane.

(The Charity Organization Societies (see page 1-14) seek to secure for the individual cases brought to its notice the benefits named in this class from the most suitable institutions and societies, or to direct thereto.)

DIVISION I.—RELIEF, HOMES OR ASYLUMS FOR THE BLIND.

BATAVIA — GENESEE COUNTY.—New York State Institution for the Blind. (See class II, division 1.)

NEW YORK CITY (Blackwell's island).—Asylum for Indigent Blind, of the Department of Public Charities and Correction. A department of the Alms-house; two wards each in the male and female divisions being assigned to the indigent and destitute blind. Capacity for 108. Apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

New York Institution for the Blind. Incorporated by special act, chapter 214, Laws of 1831. Amendatory acts: Laws of 1848; April 7, Laws of 1852; April 16, Laws of 1868; chapter 226, Laws of 1874. Opened March, 1832. Thirty-fourth street and Ninth avenue.—For the education of the young blind, from 8 to 25 years of age, physically, mentally and morally, in such ways as will qualify them for citizenship and for the duties of life. Blind persons, of suitable age and capacity, of good

NEW YORK CITY — (Continued).

moral character, and whose parents or guardians have resided for three years previously in this State are admitted. Those able to pay are charged \$300 a year. Capacity for 250 pupils. Average number, from 220 to 240. Controlled by a board of twenty managers. Supported by the board of pupils, appropriations from public funds, legacies and voluntary contributions. John T. Irving, president, 121 East Thirty-seventh street; Smith Clift, vice-president, 13 West Twenty-ninth street; Wm. C. Schermerhorn, corresponding secretary, 49 West Twenty-third street; F. A. Schermerhorn, recording secretary, 61 University place; Wm. Whitewright, treasurer, 16 West Twenty-second street; Wm. B. Wait, superintendent, to whom apply, in writing or in person, at the institution at any time.

Poor Adult Blind, of the Department of Public Charities and Correction.—The department distributes an annual appropriation as a special relief to the poor adult blind of the city, who are of good character and not inmates of any city institution. In 1890 the amount was thirty-five dollars to each applicant. Apply to William Blake, superintendent outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

New York State Industrial Home for the Adult Blind. Incorporated May 10, 1892.—To provide and maintain a home for those unfortunates who are, or those who may be, afflicted with blindness; to aid and protect and sympathize with them, and to carry out in their interest all philanthropic principles. Controlled by a board of trustees, viz.: James Blythe, 557 West Fortieth street; George F. Britton, 231 Broadway; Lucius C. Nix, 167 William street; George B. Voorhies, 11 Frankfort street; Thomas W. Matthews, 445 West Twenty-eighth street; William Leslie, 522 Eighth avenue; William H. Wharton, 11 Frankfort street.

Society for the Relief of the Destitute Blind of the City of New York, and its Vicinity. Incorporated April, 1869, under the general statute. The Home, southwest corner of Amsterdam

NEW YORK CITY — (Continued).

avenue and One Hundred and Fourth street.—To provide a home for indigent and friendless persons of both sexes, irrespective of religious denominations, where they may enjoy reasonable comforts, and have facilities for earning their livelihood. Destitute adult blind, of good moral character, free from infectious or incurable diseases, and unable to support themselves, are received, and pay ten dollars a month when able to do so, otherwise free; but all moneys or clothing belonging to such beneficiaries at the time of death, become the property of the home or society. Employment is given at making mattresses, reseating chairs and all kinds of knitting work, for which fair wages are paid. Capacity for 100. Average number of inmates, sixty-six. Controlled by a board of trustees and a board of lady managers. Supported by voluntary contributions and sale of work of inmates. E. S. Coles, president, 10 Broad street; W. W. Culver, vice-president; James McCarter, vice-president and secretary, 68 West Fifty-sixth street; Horace Manuel, treasurer, 35 Wall street. Application for admission should be made to the executive committee of the board of lady managers, at the home, the first Tuesday in each month, at 11.15 a. m.

DIVISION 2.—RELIEF, HOMES AND ASYLUMS FOR DEAF-MUTES.

ALBANY — ALBANY COUNTY.—Home School for the Oral Instruction of the Deaf. Incorporated January, 1891, under the general statute. Organized in September, 1889. A bill was passed and approved February 18th, chapter 36, Laws of 1892, amending the act of the Legislature of the State of New York, passed April 29th, chapter 325, Laws of 1863, providing for the care and education of the children under 12 years of age, whereby children as young as 5 years can now be admitted to any one of eight schools in New York State (that of Albany being the latest incorporated), and their education provided for by the county in which the child lives, if parents are unable to afford the expense.—The object of

ALBANY — (Continued).

the school, which is located at Pine Hills, shall be to educate by means of speech and speech-reading, and to provide for the instruction and care of deaf-mutes. Deaf, totally or partially deaf, children who have never talked are taught to articulate by speech-reading, which is also taught those who have lost their hearing, either wholly or partially, after learning to talk, to enable them to understand others without the use of signs or the manual alphabet. The school has a kindergarten department of day pupils, composed of neighborhood hearing children, in which the deaf children have some exercises every day with the hearing children. Controlled by a board of trustees. Supported by tuition fees and county appropriations. Edward A. Groesbeck, president; Wm. J. Milne, vice-president; Arthur L. Andrews, secretary and treasurer; Miss Anna M. Black, superintendent and principal, to whom apply by letter or in person at the home school.

BROOKLYN — KINGS COUNTY.—St. Joseph's Institute for Improved Instruction of Deaf-Mutes. Incorporated August 26, 1875, under the general statute. Opened in December, 1869. Buffalo avenue, between Dean and Bergen streets. Parent institution, No. 772 East One Hundred and Eighty-eighth street, Fordham, New York city, and also a branch at Throgg's Neck, Westchester county.—To receive, care for, maintain and educate deaf-mutes or children partially deaf, with intellectual faculties capable of instruction. The industrial departments provide for instruction in useful trades, including printing. Capacity for 400. Apply to the Superintendent of Public Instruction, Albany, for children over 12 years of age, and for those over 6 and under 12 years, to be supported at public expense, apply to the supervisor or overseer of the poor, or to the superintendent of outdoor poor. Average number of pupils, 286. Controlled by a board of seven lady managers. Supported by per capita allowance from the State and county, and by tuition fees of private pupils. Miss Margaret Cosgrove, deputy superintendent.

BUFFALO — ERIE COUNTY.—Le Couteulx St. Mary's Benevolent Society for the Deaf and Dumb (The). Incorporated October 1, 1853, under the general statute. Amendatory acts, chapter 670, Laws of 1872; chapter 213, Laws of 1875. Opened in 1856, but was closed in 1858 for lack of funds; reopened in 1861. No. 125 Edward street. Branch institution, corner of Main street and Forest avenue, for boys under 12 years of age.—To aid and instruct the deaf and dumb; to give them an education and a knowledge of some trade to enable them to become self-supporting. Cares for all deaf children whether born deaf, or who have lost their hearing, or whose hearing is too defective to permit them to receive instruction in the general schools, of good moral character, who possess intellectual faculties capable of instruction and who are free from disease. Deaf-mutes, too aged or feeble-minded to profit by instruction in a school of this class are not admitted. Capacity for 150. Average number of inmates, 132, and 141 pupils were received last year. Controlled by a board of trustees. Supported by appropriations from the State and counties and fees of parents and friends. Rev. P. S. Dunne, president and chaplain, 50 Franklin street; Sister Mary Anne Burke, principal and treasurer; Philip Hartwell, superintendent and steward; S. Isidore Gernon, assistant principal and secretary, 125 Edward street. Apply in writing to Sister Mary Anne Burke, principal, at the institution.

MALONE — FRANKLIN COUNTY.—Northern New York Institution for Deaf-Mutes. (See class II, division 1.)

NEW YORK CITY.—Association for the Improved Instruction of Deaf-Mutes. Incorporated January 9, 1869, under the general statute. Amendatory act passed, chapter 180, Laws of 1875. Maintains the Institution for the Improved Instruction of Deaf-Mutes, opened March 1, 1867. Lexington avenue, between Sixty-seventh and Sixty-eighth streets.—To teach speech and lip-reading to deaf-mute children from 6 to 14 years of age, who by reason of deafness can not be educated in the common schools, the most improved methods being

NEW YORK CITY — (Continued).

employed in the education also in the industrial, training and art departments. Imbeciles and children of feeble intellect are not admitted. Pupils able to pay are charged \$400 per annum; other applicants must be under 12 years of age and three years resident in the State of New York, and are admitted on order of the county supervisor and Commissioners of Public Charities and Correction; those over 12 years of age are admitted on order from the State Superintendent of Public Instruction at Albany. Capacity for 200. Controlled by a board of trustees. Supported by State and city funds and by tuition fees for private pupils. Marcus Gold- man, president, 649 Madison avenue; H. Mosenthal, secretary, 51 Cedar street; Louis Goldsmith, treasurer, 89 Grand street. Apply as stated above.

Church Mission to Deaf-Mutes. Incorporated October 15, 1872. Office, No. 9 West Eighteenth street. This society maintains "The Gallaudet Home for Aged and Infirm Deaf-Mutes," on a farm of 156 acres, six miles from Poughkeepsie, near Hamburgh-on-the-Hudson (P. O., Wappinger's Falls). Purchased and opened December, 1885, for the purpose named in title, who are residents of this State.—To promote the temporal and spiritual welfare of adult deaf-mutes; to minister to the sick and needy; to get work for the unemployed, etc., and for the graduates of the Institution for Deaf-Mutes, especially those of the city and State of New York. Capacity for, and average number of inmates, twenty-five. Upwards of fifty persons relieved and cared for; also sustained religious services in many places last year. The society is controlled by a board of twenty-three trustees; the home is controlled by a board of lady managers. Supported by voluntary contributions. Rt. Rev. H. C. Potter, D. D., president ex-officio; Rev. Edward H. Krause, L.L. D., and Geo. S. Stringfield, vice-presidents, 9 West Eighteenth street; Albert L. Willis, secretary, Station "T;" Wm. Jewett, treasurer, 107 Grand street; Rev. Thomas Gallaudet, D. D., general manager, 9 West Eighteenth street, to whom all applications should be made.

NEW YORK CITY — (Continued).

Mrs. C. M. Nelson, president; Mrs. E. H. Parker, secretary; Mrs. Joseph Bisbee, assistant secretary; Miss E. P. Nelson, treasurer; Miss Allen, supply committee of the board of managers, all of Poughkeepsie. Apply for admission to the home to Dr. Gallaudet, in New York, or to Mrs. C. M. Nelson, president, at the office, 33 Cannon street, Poughkeepsie.

New York Institution for the Instruction of the Deaf and Dumb (The). Incorporated by special act, chapter 264, Laws of 1817. Amendatory act, chapter 12, Laws of 1888. The institution was opened May, 1818. West One Hundred and Sixty-third street and Grand boulevard.—For the free education of the deaf and dumb in the State of New York. Without regard to the circumstances of the parents, children under 12 years of age are admitted, on application to the superintendent of the poor, or supervisor in the town, in which he or she lives; and children over 12 years of age are admitted on application to the Superintendent of Public Instruction, Albany. Cases of mental imbecility excluded. In the industrial department the pupils are taught a mechanical trade, to enable them to become self-supporting after leaving school. Capacity for 550 inmates. Average number, 300. Controlled by a board of directors. Supported by the State, counties and by charitable contributions from individuals. Enoch L. Fancher, LL. D., president, 229 Broadway; Thatcher M. Adams, secretary, 34 and 36 Wall street; George A. Robbins, treasurer, 20 Union square; Isaac Lewis Peet, principal, Station "M;" Chauncey M. Brainard, superintendent, to whom apply for further information, at the institution.

St. Joseph's Institute for Improved Instruction of Deaf-mutes. Incorporated August 26, 1875, under the general statute. Opened December 1, 1869. No. 772 East One Hundred and Eighty-eight street. Fordham. Branch homes (for girls) at Buffalo avenue, between Dean and Bergen streets, Brooklyn, and (for boys) at Throgg's Neck, Westchester, Westchester county.—To receive, care for, maintain, support and educate deaf-mutes. Children, with intellectual faculties capable of

NEW YORK CITY—(Continued).

instruction, afflicted with partial or total deafness, over 6 and under 12 years of age, and who are supported at public expense, are admitted on application to the supervisors or overseers of the poor, or to the superintendent of outdoor poor. Northwest corner of Third avenue and Eleventh street. Those over 12 years of age are received upon order of the State Superintendent of Public Instruction, at Albany. The industrial departments of the institute provide for instruction of the inmates in useful trades, including printing. Capacity for 400. Average number, 286. Controlled by a board of lady managers. Supported by per capita allowance from the State and county, and by tuition fees of private pupils. Miss Ernestine Nardin, president; Miss Anna N. Larkin, secretary; Miss Anna D. Hoyt, treasurer; Miss Mary B. Morgan, superintendent of the home at Fordham (for girls); Miss Celestine Schottmuller, superintendent at Westchester branch; Miss Margaret Cosgrove, superintendent at Brooklyn branch. Apply as stated above.

Sheltering Arms. West One Hundred and Twenty-ninth street and Amsterdam avenue. Cares for deaf and dumb children. (See class V, division 2.)

ROCHESTER—MONROE COUNTY.—American Association to Promote the Teaching of Speech to the Deaf. Incorporated September 16, 1890, under the general statute. Office of secretary No. 945 North St. Paul street.—To aid schools for the deaf in their efforts to teach speech and speech-reading by providing schools for the training of articulation teachers; by the employment of an agent or agents who shall, by the collection and publication of statistics and papers relating to the subject, and by conference with teachers and others, disseminate information concerning methods of teaching speech and speech-reading, and by using all such other means as may be deemed expedient, to the end that no deaf child in America shall be allowed to grow up “deaf and dumb” or “mute” without earnest and persistent efforts having been made to teach him to speak

ROCHESTER — (Continued).

and read the lips. Since its organization, the president, secretary and an agent have visited the schools of this State and others, and two circulars of information have been published. Controlled by a board of directors elected annually by members. Supported by income from invested funds, tuition fees and by voluntary contributions. Dr. Alexander Graham Bell, president, Washington, D. C.; Hon. Gardiner G. Hubbard, Washington, D. C., and C. A. Yale, Northampton, Mass., vice-presidents; Charles James Bell, treasurer; Zenas F. Westervelt, secretary, to whom apply at 945 North St. Paul street.

ROCHESTER — MONROE COUNTY.—Western New York Institution for Deaf-mutes. No. 945 North street. (See class II, division 1.)

ROME — ONEIDA COUNTY.—Central New York Institution for Deaf-mutes. (See class II, division I.)

WESTCHESTER — WESTCHESTER COUNTY.—St. Joseph's Institute for Improved Instruction of Deaf-mutes. Branch of parent institution at Fordham, New York city, which see in this division.

DIVISION 3.—RELIEF AND HOMES FOR THE CRIPPLED.

BROOKLYN — KINGS COUNTY.—House of St. Giles the Cripple. (See class VII, division 2.)

KING'S PARK — SUFFOLK COUNTY (L. I.).—Society of St. Johnland (New York). Receives crippled children in its homes. (See under New York Homes, Class V, division 2.)

NEW YORK CITY.—Children's Aid Society (The). Home for Crippled Boys at No. 247 East Forty-fourth street, and the Haxtun Cottage for Crippled Girls at Bath Beach, L. I. (See class III, division 3.)

NEW YORK CITY — (Continued).

Children's Hospital, of the Department of Public Charities and Correction (Randall's Island). (See class VII, division 4.)

Sheltering Arms. West One Hundred and Twenty-ninth street and Amsterdam avenue. Cares for crippled children. (See class V, division 2.)

New York Society for the Ruptured and Crippled. No. 135 East Forty-second street, corner Lexington avenue. (See class VII, division 2.)

Society of St. Johnland. Cares for crippled children in its homes at King's Park, Suffolk county (L. I.). (See class V, division 2.)

DIVISION 4.—RELIEF, HOMES AND ASYLUMS FOR THE INSANE, FEEBLE-MINDED, EPILEPTIC AND NERVOUS. See also Hospitals for the Insane.

AMITYVILLE — SUFFOLK COUNTY.—Brunswick Home.

Organized and incorporated in 1887.—For the reception, care and treatment of all nervous diseases and brain troubles. Persons of all ages are admitted without regard to duration of disease or its curability. Patients are classified, and the home is conducted on the cottage plan. Terms according to circumstances and accommodations. A school is maintained for those who are capable of receiving instruction. Stephen R. Williams, superintendent, to whom apply by letter or in person at any time. (As no response was received from the home, this information was copied from the "New York Charities' Directory.")

AUBURN — CAYUGA COUNTY.—The State Asylum for Insane Criminals, formerly at Auburn, is now removed to Matteawan, Dutchess county. (See class II, division 1.)

BINGHAMTON — BROOME COUNTY.—Binghamton State Hospital. (See class II, division 1.)

BUFFALO — ERIE COUNTY.—Buffalo State Hospital. (See class II, division 1.)

BUFFALO — (Continued).

Erie County Alms-house or Poorhouse Insane Asylum. Main street, six miles from Buffalo. Supported by the county for the care and treatment of the indigent, chronic insane, received on a warrant of the superintendent of the poor, accompanied by a certificate of insanity from the two examiners in lunacy approved by the county judge. (See also class V, division 4.)

Providence Retreat. Incorporated August 6, 1860, under the general statute, as "Providence Lunatic Asylum," name changed to present title, April 14, 1890, by order of the Supreme Court. Opened in August, 1860, corner of Main and Steele streets.—To operate and maintain, for compensation or hire, an institution for the care, custody or treatment of the insane (not inebriates, or morphine and cocaine patients), under the provision of the statute affecting the same, and no patient can be admitted to the above-named institution, or held in custody therein, for care or treatment, except upon a medical certificate of lunacy, approved by a Judge of a Court of Record, or upon an order of such court of judges. Capacity for 175. Average number of inmates, 115. During last year over 380 were cared for. Controlled by the Sisters of Charity of St. Vincent de Paul. Supported by board for private and public patients. Floyd S. Crego, M. D., chief of medical staff; Harry A. Wood, M. D., physician in charge; T. E. McGarr, secretary. Apply to the sisters in person, or by letter at any time at the "Retreat."

CENTRAL ISLIP — SUFFOLK COUNTY (L. I.).—New York City Insane Asylum, branch of the Department of Public Charities and Correction, which see under New York in this division.

FLATBUSH — KINGS COUNTY.—Kings County Asylum for the Insane of the Department of Charities and Correction. Opened in 1855.—For the indigent insane, legal residents of Kings county. Capacity for 900. W. S. Fleming, M. D., acting general medical superintendent. Apply to the commissioners at 29 Elm place, corner of Livingston street.

HARRISON—WESTCHESTER COUNTY.—St. Vincent's Retreat for the Insane. (See class VI, division 5.)

KING'S PARK — SUFFOLK COUNTY.—Kings County Branch Insane Asylum of Department of Charities and Correction. Opened in 1855, known also as the County Farm, St. Johnland. Apply to the commissioners at the office, 29 Elm place, corner of Livingston street, Brooklyn. (See class II, division 2.)

MATTEAWAN (P. O. Fishkill-on-the-Hudson) — DUTCHESS COUNTY.—State Asylum for Insane Criminals. (See class II, division 1.)

MIDDLETOWN — ORANGE COUNTY.—Middletown State Homoeopathic Hospital. (See class II, division 1.)

MINEOLA — QUEENS COUNTY.—Queens County Insane Asylum. Dr. C. H. Clement, keeper.

NEWARK — WAYNE COUNTY.—New York State Custodial Asylum for Feeble-minded Women. (See class II, division 1.)

NEW YORK CITY.—Bloomingdale Asylum of the "Society of the New York Hospital." One Hundred and Seventeenth street and Amsterdam avenue. (See class VII, division 1.)

New York (Blackwell's island) Epileptic Hospital of the Department of Public Charities and Correction. (See class VII, division 2.)

New York City Lunatic Asylum of the Department of Public Charities and Correction. (Blackwell's island.) Opened in 1839.—Cares for the destitute insane females legal residents of the county of New York, whose friends can not provide for them in a private asylum. Apply to William Blake, superintendent outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

Branch of New York City Insane Asylum of the Department of Public Charities and Correction (Central Islip, Suffolk County, Long Island), for the reception of males who are able to do outdoor work and who may be benefited thereby.

NEW YORK CITY — (Continued).

Apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class VII, division 2.)

Branch of the City Insane Asylum of the Department of Public Charities and Correction (Hart's island). Opened in 1877. The branch of the New York City Asylum for the Insane on Ward's island for males. Apply to William Blake, superintendent, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

Branch Lunatic Asylum of the Department of Public Charities and Correction (Hart's island). Branch of the New York City Lunatic Asylum, Blackwell's island, for females. Apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street, 8 a. m. to 5 p. m. (See class II, division 2.)

Idiot Asylum of the Department of Public Charities and Correction (Randall's island).—For the care of destitute idiotic and feeble-minded children. Apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

New York City Asylum for the Insane (opened in 1871) of the Department of Public Charities and Correction (Ward's island).—Cares for destitute insane males whose friends can not provide for them in private asylums. Apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

Society for Promoting the Welfare of the Insane. Incorporated October, 1882, under the general statute. Meetings are held at the residence of ex-President Amelia Wright, M. D., 150 West Thirty-fourth street.—To improve the treatment and condition of the insane and the prevention of insanity; and to that end to promote the diffusion of an accurate knowledge of mental diseases among the public; to secure a more thorough and scientific study of these diseases, by the medical profession; a better recognition by the State and by the community of the legal and personal rights of the insane; to promote the improvement of asylums and hospital

NEW YORK CITY — (Continued).

management; the revision and perfecting of existing lunacy laws; the establishment of organized State boards of lunacy; to collect information concerning the treatment and management of the insane in asylums and elsewhere. Controlled by a board of managers. Supported by dues of members and an assessment of members. Mary A. Brinckermann, M. D., president, 219 West Twenty-third street; B. F. Dexter, M. D., first vice-president, 35 West Forty-ninth street; Wm. J. Demorest, second vice-president, 21 East Fifty-seventh street; Phoebe J. B. Wait, M. D., third vice-president, Ninth avenue and Thirty-fourth street; Miss Marie E. Webb, secretary, 150 West Thirty-fourth street; Mrs. Ruth Hulse, treasurer, Monroe, Orange county.

OGDENSBURGH — ST. LAWRENCE COUNTY.— St. Lawrence State Hospital. (See class II, division 1.)

POUGHKEEPSIE — DUTCHESS COUNTY.— Hudson River State Hospital. (See class II, division 1.)

ROCHESTER — MONROE COUNTY.— Rochester State Hospital. South avenue. (See class II, division 1.)

ROME — ONEIDA COUNTY.— Oneida County Asylum and Alms-house. (See class V, division 4.)

SYRACUSE — ONONDAGA COUNTY.— Syracuse State Institution for Feeble-Minded Children. (See class II, division 1.)

TROY — RENSSELAER COUNTY.— Marchall Infirmary (and Rensselaer County Lunatic Asylum). (See class VII, division 1.)

UTICA — ONEIDA COUNTY.— Utica State Hospital. (See class II, division 1.)

WILLARD, Seneca lake — SENECA COUNTY.— Willard State Hospital. (See class II, division 1.)

DIVISION 5.—PRIVATE HOMES FOR NERVOUS AND INSANE PERSONS.

AMITYVILLE — SUFFOLK COUNTY.—Long Island Home for Nervous Invalids. Incorporated in 1881. Receives patients suffering from acute and chronic insanity. Strictly private. O. T. Wilsey, M. D., medical superintendent, to whom apply.

Louden Hall Insane Asylum. A private asylum for persons with nervous diseases and brain troubles. John Louden, superintendent, to whom apply.

AUBURN — CAYUGA COUNTY.—“The Pines.” Number limited to eight. Frederick Sefton, M. D., physician in charge, to whom apply.

BRONXVILLE — WESTCHESTER COUNTY.—Vernon House Dr. Granger's Private Asylum for the Insane.

BROOKLYN — KINGS COUNTY.—Dr. Well's Sanitarium. 945 St. Mark's avenue.—For female patients only, afflicted with the milder forms of nervous and mental diseases, etc., of all ages. Limited to sixteen. Thomas L. Wells, M. D., medical superintendent, to whom apply.

Pariah Hall. A private medical home for opium habitues. J. B. Mattison, M. D., physician, to whom apply.

CANANDAIGUA — ONTARIO COUNTY.—Brigham Hall. A private hospital for the insane. Capacity for seventy patients. Apply to D. R. Burrell, M. D., resident physician.

CENTRAL VALLEY — ORANGE COUNTY.—“Falkirk.”—For the treatment of nervous and mental diseases, the alcohol and opium habits. Apply to Dr. Ferguson or to Dr. Sprague at No. 168 Lexington avenue, Tuesdays and Fridays, from 11.30 to 12.30 a. m., or by appointment at the institution.

FLUSHING — QUEENS COUNTY.—Sanford Hall. Established in 1841, as a private asylum for patients with nervous and mental diseases. Apply for admission of patients at the office,

FLUSHING — (Continued).

J. W. Barstow, M. D., No. 128 Lexington avenue, New York city, every Tuesday and Saturday, from 10 a. m. to 12 m., or at the institution at Flushing.

HARRISON — WESTCHESTER COUNTY.— St. Vincent's Retreat for the Insane. Incorporated by Special act, November, 1879. An asylum for the care of insane women only, conducted on the home plan, unsectarian, and open to all except inebriates, epileptic and paralytic cases. Receives patients from New York city and adjacent cities. Terms for admission, ten dollars and upwards weekly, payable in advance. Capacity for sixty. Average number of inmates, fifty-eight. Cared for eighty-one patients last year. Controlled by a board of managers of the community of Sisters of Charity, with a resident and consulting physician. Supported by revenue from patients' board. Elizabeth Stuart, Catherine Fitzgibbons, Mary Fitzgibbons, Maria Dodge and Julia Reilly, officers, all of Mt. St. Vincent-on-the-Hudson. Apply in person or by letter to the superintendent at the retreat from 9 a. m. to 5 p. m.

MAMARONECK — WESTCHESTER COUNTY.—Waldemere-on-the-Sound.—For the care and treatment of a limited number of patients suffering from mental and nervous disorders. Elon N. Carpenter, M. D., physician-in-charge, to whom apply at No. 5 East Forty-first street, from 9 to 11 a. m.

NEW YORK CITY.—Bloomingdale Asylum of the "Society of The New York Hospital." One Hundred and Seventeenth street and Amsterdam avenue. (See class VII, division 1.)

St. Vincent's Retreat for the Insane.—At Harrison, Westchester county. Receives patients from New York and adjacent cities. (See under Harrison, Westchester county, in this division.)

OWEGO — TIOGA COUNTY.—"Glenmary."—A homeopathic home for insane patients. Number limited to thirty. J. T. Greenleaf, M. D., physician-in-charge, to whom apply.

PLEASANTVILLE — WESTCHESTER COUNTY.—Dr. George C. S. Choate's Home.—Licensed by the State Commission in

PLEASANTVILLE — (Continued).

Lunacy, for the care and treatment of the insane. Capacity for ten. Apply to Dr. Choate at the home, or at his office, No. 5 East Twenty-seventh street, New York city.

SING SING — WESTCHESTER COUNTY.—Dr. Parson's Home.

Number limited to twelve. Apply to R. L. Parsons, M. D., by letter or in person.

TROY — RENSSELAER COUNTY.—Marshall Infirmary. (See class VII, division 1.)

WHITESTONE — QUEENS COUNTY (L. I.).—"Breezehurst Terrace."—For the reception of insane patients. Number limited to nineteen. D. A. Harrison, M. D., physician in charge, to whom apply.

WOOD HAVEN — QUEENS COUNTY.—Dr. Combes' Sanitarium. Number limited to thirty-four. H. Elliott, M. D., physician in charge, to whom apply.

C L A S S V I I .

MEDICAL AND SURGICAL RELIEF.

[The Charity Organization Societies (see pp. 1 to 14) seek to secure for the individual cases brought to its notice, the benefits named in this class from the most suitable institutions and societies, or to direct thereto.]

DIVISION I.—GENERAL HOSPITALS.

ALBANY—ALBANY COUNTY.—Albany City Homeopathic Hospital and Dispensary. Incorporated by special act under present title May 28, chapter 435, Laws of 1875, whereby the union of the "Albany City Dispensary Association" (incorporated December 23, 1867, under the general statute), and the "Albany Homoeopathic Hospital" (incorporated November 4,

ALBANY — (Continued).

1872), was effected. Opened in 1868. No. 123 North Pearl street.—To maintain in the city of Albany a homoeopathic hospital, wherein surgical and medical care and treatment may be provided for such sick and disabled persons as may desire to avail themselves of its advantages; also a medical and surgical dispensary at which medical and surgical treatment may be furnished to such indigent persons as may apply for the same. Attention is given specially to the poor and needy patients. No contagious cases are admitted. Capacity for ——. Average number of patients in the hospital annually, 225. In the dispensary, 1,560. Controlled by a board of trustees. Supported by voluntary contributions, board of pay patients and an appropriation from the city, payable only when earned. Frederick Harris, president, 276 State street; F. E. Griswold, vice-president, Willett street; James W. Cox, Jr., secretary, 194 Lark street; J. H. Ten Eyck, treasurer, 208 State street. Apply to the physicians in charge, the officers, or to the superintendent of the poor, at any time, in person or by letter.

Albany Hospital (and Dispensary). Incorporated by special act April 11, 1849. Opened in 1851. Corner of Eagle and Howard streets.—To establish and maintain a public hospital in the city of Albany, wherein is provided medical and surgical relief and treatment to pay patients, city pay patients and charity patients, except such as are suffering from contagious diseases. Capacity for ninety-eight. Average number of inmates, seventy-nine. Last year 4,229 days of gratuitous care and treatment was given the sick poor, and 10,500 days to patients for whom the city paid four dollars a week, per capita. In the outdoor department 7,022 needy patients were treated and 3,543 prescriptions were donated. Controlled by a board of governors. Supported by pay patients, city appropriations, voluntary contributions and invested funds. Andrew E. Mather, president; Joseph W. Russell, vice-president; James McCredie, secretary; Lewis Dietz, treasurer; all of Albany. Apply to the attending phy-

ALBANY — (Continued).

sician at the hospital at any time, and at the dispensary during office hours.

St. Peter's Hospital of the City of Albany (including Albany Charitable Eye and Ear Infirmary). Incorporated March 13, 1871, under the general statute. Broadway, corner of North Ferry street.—For the maintenance of a hospital for medical and surgical treatment of patients, also diseases of the eye and ear, and of children, and also of a free Dispensary (opened in November, 1869). Needy patients without regard to their creed or condition, except contagious cases, are cared for gratuitously, if after medical examination they are found deserving, but those able to do so are expected to pay. Receives all cases committed by the overseers of the poor of the city of Albany. Capacity for 65. Average number of inmates, forty-eight. The Dispensary also gives free treatment to the poor of the neighboring counties. Over 112 free patients were cared for and 6,430 free prescriptions provided last year. Controlled by a board of trustees of the Sisters of Mercy, with an advisory board. Supported by pay of patients and by voluntary contributions. Mother Mary Philomena, president and treasurer. Apply to the Sister in charge or to the physician in charge at the hospital at any time.

AMSTERDAM — MONTGOMERY COUNTY.—Amsterdam City

Hospital. Incorporated September 24, 1888, under the general statute. Opened in September, 1889. No. 203 Division street.—For the care of the sick and injured. Free beds for the afflicted poor are provided by endowment through the efforts of the "Ladies' Hospital Aid Society," to the chairman of which application should be made by those unable to pay. Chronic and contagious cases are excluded. Capacity, twenty-four beds. Average number occupied, eight. Last year, 104 patients were cared for. Controlled by a board of trustees. Supported by annual dues of members, donations, pay of patients, and assistance from the "Ladies' Hospital

AMSTERDAM — (Continued).

Aid Society." Hon. C. Van Buren, president; W. Max Reid, secretary; Thos. F. Kennedy, treasurer of board of trustees; Mrs. C. Van Buren, president; Mrs. W. E. Teft, corresponding secretary; Mrs. Henry E. Story, recording secretary; Mrs. T. G. Hyland, treasurer of ladies' committee. Apply at the hospital.

AUBURN — CAYUGA COUNTY.— Auburn City Hospital.

Incorporated in July, 1878, under the general statute. Opened in April, 1880. Lansing street.—For the care and treatment of the city poor, sick people and those injured by accident. Patients unable to pay are received free of charge, but to those who have means, six dollars and seven dollars per week is charged for board. City patients are paid for at the rate of four dollars and fifty cents per week. No chronic, contagious or venereal cases received. Capacity for thirty-six. Average number of patients, twenty. Last year 154 patients were cared for, nineteen of which were charity patients and ten were free bed patients. Controlled by a board of trustees and a board of lady managers. Supported by endowment, church collections, annual contributions for table supplies and by board of patients. Cyrenus Wheeler, Jr., president; Wm. H. Seward, vice-president; Byron C. Smith, secretary; Joseph C. Anderson, treasurer of board of trustees. Miss C. E. Dennis, chairman; Miss J. M. Cox, secretary; Mrs. H. D. Woodruff, treasurer of board of managers. Apply to the matron at the hospital or to any of the medical staff at any hour of day or night.

BINGHAMTON — BROOME COUNTY.— Binghamton City Hospital. Incorporated in 1887, under the general statute. Opened in March, 1888. No. 272 Court street.—For the care of sick and injured persons, except those afflicted with chronic or contagious diseases. All patients who are able to pay, are expected to do so, otherwise they are taken as charity cases. Capacity, twenty beds. Average number occupied, seven. Controlled by a board of fifteen trustees

BINGHAMTON — (Continued).

and a board of twenty-four managers. Supported by an appropriation from the city, by board of patients and by voluntary contributions. J. E. Rogers, president; R. J. Bates, vice-president; George L. Parker, secretary; S. Hammond, Jr., treasurer. Apply to the medical board or to the physician in charge.

Chapel and House of the Good Shepherd. (See class V, division 3.)

BROOKLYN — KINGS COUNTY.—Bedford Dispensary Association. No. 343 Ralph avenue, near Herkimer street. (See class VII, division 6.)

Brooklyn (E. D.) Dispensary and Hospital. Incorporated in 1851, under the general statute, as the "Williamsburgh Dispensary." Name changed to present title by special act, May 21, 1872. Hospital was opened in 1872. Nos. 108 to 112 South Third street.—For the medical and surgical care of emergency cases, almost entirely, sent by the ambulance department of the city. The Dispensary, which is open daily, except Sundays, at 2 p. m., provides medical and surgical relief to the sick poor who are totally unable to pay for same. Has special clinics for diseases of the eye, ear and throat. Two hundred and seventy-three patients were cared for in the Hospital and 26,628 in the Dispensary, to whom 32,340 prescriptions were dispensed during 1891. A small charge is made for medicines to those able to pay. Controlled by a board of trustees. Supported by the city appropriation and voluntary contributions. George H. Fisher, president, 99 Broadway; William Dick and W. D. Chase, vice-presidents; George V. Tompkins, secretary; Otto F. Struse, treasurer; E. P. Orrell, M. D., superintendent, to whom apply.

Brooklyn Homeopathic Hospital. Incorporated in 1871, under the general statute. Amendatory acts were passed February 9, chapter 27, Laws of 1871, and July 7, chapter 387, Laws of 1882. The Dispensary was opened in 1852 and the Hospital in 1871. Nos. 105 to 111 Cumberland street.—For the medical and surgical relief of the sick and destitute by homeopathic remedies; had also a Maternity ward for destitute

BROOKLYN — (Continued).

mothers and infants. No contagious cases are received. Capacity, 100 beds, all of which are usually occupied. Eight hundred and thirty-eight beneficiaries last year in the hospital, including 110 lying-in cases, and 10,563 patients were treated free in the dispensary. The hospital also maintains an ambulance service and a training school for nurses. Controlled by a board of trustees. Supported by voluntary contributions, donations, subscriptions, board of patients, nurses' fees, and by an appropriation from the city, and excise money, etc. W. W. Goodrich, president, 202 Washington park; Carl H. De Silver, vice-president, 43 Pierrepont street; Sturgis Coffin, secretary, 287 Henry street; H. D. Atwater, treasurer, 184 Joralemon street; Chas. L. Bonnell, M. D., chief of medical staff. Apply to the resident surgeon or physician at the hospital during the day. Emergency cases are received at any hour.

Brooklyn Hospital. Incorporated by special act, chapter 154, Laws of 1845. Amendatory acts, chapter 93, Laws of 1849; chapter 14, Laws of 1856; chapter 116, Laws of 1858. Opened in November, 1846. Raymond street and De Kalb avenue.—To maintain a public hospital in the city of Brooklyn for the sick poor. Patients with incurable or contagious disease are not admitted. Cases of accident and other emergencies are received at all hours. Those requiring free treatment may be recommended by any member of the board of trustees, of the medical staff, or by the mayor of the city. Capacity for 135. Average number of inmates, 102. Maintains, also, a general Dispensary and an Orthopedic Dispensary, opened in 1868. For the gratuitous treatment of the deformities and diseases of the joints. Open Tuesdays and Fridays, at 2 p. m. Last year 1,110 patients were received and given 32,579 days of free treatment, while others paid a small amount. Controlled by a board of twenty-four trustees. Supported by income from endowments, pay patients, appropriation from city and by voluntary contributions. Wm. G. Low, president, 158 Remsen street; Henry P. Morgan, vice-president,

BROOKLYN — (Continued).

162 Columbia Heights; E. H. Kidder, secretary, 110 Gates avenue; Edward Merritt, treasurer; 203 Montague street; C. V. Dudley, superintendent, to whom apply at the hospital.

Chinese Hospital Association. Incorporated December 29, 1890, under the general statute. No. 45 Hicks street, Brooklyn.—To maintain a general hospital for the reception, care and maintenance of, and the giving of medical and surgical advice and treatment exclusively to all sick Chinese, of all ages, afflicted with any physical weakness, injury or deformity, excepting contagious diseases. At present, the hospital contains only seven beds, all of which are free. A nominal charge is made to those able to pay. New York patients are received. Controlled by a board of nine managers. Supported by voluntary contributions, church collections, etc. Rev. Edward Braislin, D. D., president, 306 St. James place; N. B. Sizer, M. D., secretary, 336 Greene avenue; C. E. Bruce, M. D., treasurer, 456 Lexington avenue, New York city; J. C. Thomas, M. D., superintendent, to whom apply at the hospital as above.

Church Charity Foundation of Long Island (The). (See class V, division 2; also St. John's Hospital, entered in this division.)

German Hospital. St. Nicholas avenue, near Himrod street. Opened in 1889. The business of the hospital is done in an unconnected manner; the buildings are at present unoccupied. John Doscher, president; Christopher Hunker, treasurer. No answer was received. Copied from a directory.

Kings County Hospital of Department of Charities and Correction (Flatbush).—For the sick poor of Kings county. Capacity, 400 beds. Has also a smallpox pavilion. Has also a Dispensary service for the outdoor poor. Cases of accident are received at any hour of the day or night. Apply for admission to the commissioners at their office, 29 Elm place, corner of Livingston street.

Long Island College Hospital of the City of Brooklyn. Incorporated by special act, March 6, 1858. Amendatory acts,

BROOKLYN — (Continued).

chapter 181, Laws of 1862; chapter 458, Laws of 1864; chapter 954, Laws of 1867; chapter 135, Laws of 1879; chapter 7, Laws of 1881; chapter 324, Laws of 1885. Opened in November, 1857. Henry street, between Pacific and Amity streets.— For the purpose of establishing and maintaining a public hospital in the city of Brooklyn, and of providing medical science and instruction in the department of learning connected therewith. For the public generally except those afflicted with contagious and infectious diseases, or of unsound mind. The worthy poor of the city are admitted free; persons suffering from syphilitic diseases or from mania are, however, not received as charity patients. There is also a Maternity ward. A moderate charge is made to persons able to pay either in the general wards or in private rooms. Capacity, 250 beds. Number treated last year, 2,865. Has also a Training School for nurses connected with the hospital; to train and educate nurses to take care of sick persons in hospitals and private families. Applicants must be between 25 and 35 years of age, having a good common school education and of respectable moral character. The Dispensary, opened in 1859 and connected with the hospital, provides for free medical and surgical advice and treatment to the sick poor, who are unable to procure the same, but a small charge is made for all prescriptions to those able to pay; free to those who can not do so. Open daily, except Sunday, from 1 to 2 p. m. Insane and contagious cases are not received. Sixteen thousand six hundred and ninety patients were treated last year, who paid 36,278 visits to the dispensary. Controlled by a board of regents. Supported by board and rent of rooms, from pay patients, by voluntary contributions and by an annual appropriation of \$4,000 for the hospital and \$1,500 for the dispensary from the city funds. Thomas H. Rodman, president; Thomas S. Moore, vice-president; W. J. Osborne, secretary; Francis E. Dodge, treasurer, all of Brooklyn. Hospital patients must apply to the general superintendent. Applicants for training school apply to the superintendent of

BROOKLYN — (Continued).

the school at the hospital, and dispensary patients must apply during office hours.

Lutheran Hospital Association of the City of New York and Vicinity. East New York, twenty-sixth ward. (See under New York Hospitals, class VII, division 2.)

Methodist Episcopal Hospital in the City of Brooklyn (The). Incorporated by special act, May 27, 1881. Opened December, 1887. Between Sixth and Seventh streets and Seventh and Eighth avenues. Under the supervision of the Methodist Episcopal Church.—To establish, maintain and conduct a hospital in the city of Brooklyn, for the treatment of general medical and surgical diseases of the sick, irrespective of race, color or creed, except those afflicted with contagious, incurable or chronic diseases. Capacity for seventy. Average number of inmates, sixty-one. Patients are expected to pay a part or the whole of the cost of their maintenance, but no one is refused admission on account of inability to pay, unless the resources of the hospital have been exhausted. Terms, ten dollars per week in the open wards, to be paid in advance. During last year 1,045 patients were cared for, 18,128 days of free treatment were given and 976 ambulance calls were responded to. Applicants from a distance must forward with their application a statement as to the nature and probable duration of their disease by a reputable physician. Persons suffering from severe accident will be admitted to the hospital at any hour of the day or night; other patients are received from 9 a. m. to 5 p. m. If unable to apply in person, they will be visited on request at their homes, if residing in Brooklyn or in New York. Controlled by a board of managers. Supported by voluntary contributions, board of patients, etc. Rev. James M. Buckley, D. D., president; James McGee, vice-president; Lewis S. Pilcher, M. D., secretary and president of the medical board; John French, treasurer; Rev. J. S. Breckinridge, superintendent, 216 Garfield place, to whom apply in person or by letter at the hospital from 9 a. m. to 5 p. m.

BROOKLYN — (Continued).

Norwegian Relief Society. Hospital and home at Forty-sixth street and Fourth avenue. (See class III, division 8.)

Plattddeutscher Volkfest Verein Hospital, eastern district. No. 51 Ewen street, Prospect Heights. (No information has been received from this institution.)

St. Catherine's Hospital Association of the City of Brooklyn.— For the purpose of erecting, establishing, maintaining and operating hospitals, infirmaries or homes, for the reception, care, maintenance, giving of medical and surgical advise, aid and treatment to persons afflicted with maladies or physical injuries or physical weaknesses, or deformities or infirmities and dispensaries, to be located in the city of Brooklyn. Controlled by a board of trustees. Supported by city appropriations and board of patients. Apply at the hospital.

St. Catherine's Hospital of the Roman Catholic Church of the Most Holy Trinity. Incorporated October 4, 1861, under the general statute. Opened October, 1870. Bushwick avenue, between Ten Eyck and Maujer streets.— For the gratuitous medical treatment and nursing of the sick and indigent poor, irrespective of creed, except those afflicted with smallpox and syphilis. Capacity for 180. Average number of patients, 170. Last year, 2,358 patients were cared for in the hospital, and 1,484 in the Dispensary or outdoor department. Maintains also an ambulance service. Controlled by the Sisters of St. Dominic and a medical board. Supported by voluntary contributions, etc. Very Rev. Michael May, V. G., Thomas Haslock, Anthony Schimmel, officers. M. Cunegund Schell, superioress; James N. West, M. D., house physician. Apply for admission to the hospital in person, or through a friend to the sister at the door from 9 to 11 a. m. Emergency cases received at all hours.

St. John's Hospital of the "Church Charity Foundation of Long Island." Atlantic avenue, corner of Albany avenue. Opened June 21, 1871.— For the medical and surgical treatment of patients suffering from acute, curable and non-contagious diseases. Adult applicants are expected to pay seven dollars and upwards, when they are able to do so, and children, four dol-

BROOKLYN — (Continued).

lars a week, otherwise, there is a free ward for the indigent. Capacity, eighty-five beds. Under the care of the deaconess of the Church Charity Foundation. Controlled by the board of managers. Apply to the resident physician or surgeon at the hospital. For further information, see class V, division 2.

St. Martha's Sanitarium and Dispensary, Nos. 1301 and 1303 Dean street. (See class VII, division 2.)

St. Mary's Hospital of the City of Brooklyn. Incorporated June 12, 1882, under the general statute. Opened November, 1882, corners Rochester, Buffalo and St. Mark's avenue and Prospect place. Open to all persons of all nationalities and creeds suffering from injury or disease not infectious; gratuitous treatment to the sick poor and other needy persons. Has also a Dispensary service. Capacity for and average number of patients, 200. About 1,850 patients were cared for last year. Controlled by a board of trustees and the Sisters of Charity. Supported by voluntary contributions, and board of private patients. Rt. Rev. Charles McDonnell, D. D., president; Mrs. James McMahon, 87 McDonough street; James Clyme, 250 Henry street; Sister M. Emiliana, Sister-in-charge, to whom apply at the hospital.

St. Peter's Hospital. Henry street. (See under "Sisters of the Poor of St. Francis," next entry.)

Sisters of the Poor of St. Francis, St. Peter's Hospital. Incorporated by special act, February sixteenth, chapter 189, Laws of 1866. Hospital opened September, 1864, Henry street, between Congress and Warren streets.—For the gratuitous care of the sick, infirm and poor of all creeds and nationalities. No contagious cases received. Capacity for 300. Last year, 2,010 were cared for. Controlled by the Sisters of the Poor of St. Francis. Supported by voluntary contributions and solicited alms. Sister Gonsalva, superioress, to whom apply or to the sisters in charge at the hospital.

Southern Dispensary and Hospital of the City of Brooklyn. No. 119 Third place. (See class VII, division 6.)

BUFFALO — ERIE COUNTY.—Buffalo General Hospital. Incorporated December 12, 1855, under the general statute. Amendatory act passed May 28, 1875. Opened in 1857. No. 100 High street.—For the care and treatment of sick and injured people, especially indigent persons (not chronic invalids), who are unable to procure medical relief, and who may be benefited by hospital treatment. Smallpox and cholera cases are excluded. Capacity for 160. Average number of inmates, 108. Thirty-nine thousand two hundred and twenty-nine days of relief were furnished to free patients last year. Controlled by a board of trustees and the Ladies' Hospital Association. Supported by revenue from patients who can pay, by the city and county for care of poor people, and by voluntary contributions. T. G. Avery, president; W. H. Walker, vice-president; C. R. Wilson, secretary; Ed. R. Spaulding, treasurer; all of Buffalo. Jno. D. Long, warden, to whom apply at the hospital.

Buffalo Homeopathic Hospital. Incorporated June 26, 1872. under the general statute. Opened in October, 1872. Corner of Cottage and Maryland streets. Maintains a free Dispensary at No. 11 East Genesee street, and training school for nurses at the cottage, No. 51 Twelfth street.—A homeopathic medical, surgical and lying-in hospital for the sick or injured. Capacity for forty patients. Average number, thirty. Controlled by a board of trustees. Supported by patients' fees, voluntary contributions, etc. Trustees, Mrs. E. P. Hollister, Joseph J. Churchyard, Wm. G. Warren, F. M. Inglehart, C. F. Dunbar, M. A. Verner, H. D. Burt, D. H. De Barr, S. K. Birge, O. P. Letchworth, F. C. M. Looty, F. A. Hodge, J. H. Meech, Mrs. J. T. Cook, chairman of the association board; Mrs. C. J. North, secretary; Mrs. E. J. Plumley, chairman of executive committee; Mrs. J. N. Kenyon, secretary; Mrs. David Shirrell, chairman training school committee; Lucy Lee, secretary. Apply to the matron or to the staff of physicians at the hospital.

BUFFALO — (Continued).

Buffalo Hospital of Sisters of Charity. Incorporated in 1858, under the general statute. Opened July 8, 1848. No. 1833 Main street. Emergency hospital branch, exclusively for cases of accident and injury is at No. 156 South Division street.—To found and sustain a hospital for the relief of the sick and destitute in the city of Buffalo, in said county, and for no other or different purpose.—For the care of the sick and wounded, acute medical and surgical cases of both sexes and in some instances of chronic cases, irrespective of creed, color or nationality, except those afflicted with contagious diseases. Provides also for marine patients, under contract with the United States Marine Service; uses tents in summer for contagious diseases. Capacity for 220. Average number of inmates, 200. Over 220 patients were cared for last year in the Emergency hospital, and over 1,350 in the Buffalo hospital. The Dispensary provides free advice and treatment with medicines to the outdoor poor. Controlled by the Sisters of Charity. Supported by board of private patients and by voluntary contributions. Sister M. Florence, president; Sister M. Angela, secretary; Sister M. Perboyer, treasurer; all residing at the hospital. Apply in person or by letter to the Superioress at the hospital, or to the resident surgeon.

Charity Foundation of the Protestant Episcopal Church in the City of Buffalo. (See class V, division 3.)

Emergency Hospital of Buffalo Hospital of the Sisters of Charity (which see above). No. 156 South Division street. Exclusively for cases of accident and injury.

Erie County Poor-house, Hospital Department. (See class V, division 4.)

Fitch Accident Hospital of the Charity Organization Society of Buffalo. (See class I.) Not separately incorporated. Opened in August, 1887, in the Fitch Institute. No. 165 Swan street.—For the temporary care and treatment of injured persons. Only emergency cases are received; free to the indigent, but a nominal charge is made to those able to pay. Capacity

BUFFALO — (Continued).

for twelve. Average number of patients daily, three. Over 1,040 cases cared for last year. Controlled by a committee of the council of the Charity Organization Society. Supported by receipts from pay patients, charitable contributions and by an appropriation from the Fitch income held in trust by the above society. Leon T. Harvey, M. D., medical director; M. S. Rosenau, secretary. Apply to the house surgeon at any hour.

COOPERSTOWN — OTSEGO COUNTY.—Thanksgiving Hospital for Cooperstown. Incorporated October 12, 1868, under the general state as the "Thanksgiving Hospital of Otsego County." Charter amended April 11, 1892. This institution, whose intended object is to care for the sick and injured poor of Cooperstown and vicinity, is not yet built or opened, and the organization is not yet completed. Occasional relief, however, has been given to parties in their homes. After the charter is amended and a new board of trustees elected, it is expected a building will be erected to accommodate ten patients, and connected with the hospital will be an outdoor department. At present there is an endowment fund of \$25,000, also a cash building fund of \$10,000, and three acres of property. The present officers of the board of trustees, now called managers, are: Horace Lathrop, M. D., president; Theodore C. Turner, treasurer; Susan Fennimore Cooper, secretary and general manager, to whom apply, or to any officer, at any time.

CORTLAND — CORTLAND COUNTY.—Cortland Hospital Association. Incorporated April 25, 1892, under the general statute. To build, buy or rent suitable buildings, to purchase or rent necessary real estate, to equip, maintain and conduct a hospital for the care and treatment of sick, injured and maimed persons under such rules and regulations and restrictions as may hereafter be prescribed by the laws of the association. Hospital was opened April 3, 1891. No. 31 Clayton avenue.—To provide a hospital for the

CORTLAND — (Continued).

care of sick and injured persons, except those suffering from contagious diseases. Patients able to pay are charged accordingly, but the indigent sick, residents of the town of Cortland, are cared for gratuitously. Capacity for seven beds. Five free patients were received last year. Controlled by a board of twenty-one trustees and managers. Supported by voluntary contributions and pay patients. Mrs. F. O. Hyatt, president, 182 South Main street; Mrs. W. H. Clark, vice-president, 31 Prospect street; Mrs. A. E. Buck, secretary, 27 Union street; Mrs. Jerome Squires, treasurer, 44 Groton avenue. Apply for admission to any member of the executive committee at the hospital.

ELMIRA — CHEMUNG COUNTY.— Arnot-Ogden Memorial Hospital. Incorporated April 10, 1888, under the general statute. Opened December 20, 1888 — To establish and maintain in the city of Elmira a hospital and dispensary, at which shall be received persons requiring medical and surgical advice, aid and treatment, and where medicines may be provided and dispensed for their benefit, and where they may receive all necessary care and suitable medical and surgical treatment. Its purpose is not only to receive the sick or injured who are not able to provide for themselves, but to make a place for others who may desire the especial privileges of such an institution, and who can make adequate return. Open to all without regard to age, sex, color, creed or nationality. Necessitous cases are received without charge. Non-paying patients must present the certificate of a manager or a member of the medical staff that they are really in need and are unable to pay; such patients shall be restricted to surgical cases, and to cases of acute disease, and those of such chronic disease as may be amenable to treatment within a period not exceeding three months. All patients who are able to pay board, or contribute toward such payment, are charged, according to circumstances and accom-

ELMIRA — (Continued).

modations required, from one dollar a day and upwards. Contagious, infectious and chronic cases are excluded. There is a school of instruction for nurses and an ambulance service connected with the hospital. Capacity for sixty. Average number of patients, twenty-five. Last year 256 patients were cared for. Controlled by a board of managers. Supported by income from invested funds, bed endowments, pay patients, donations and voluntary contributions. Francis Hall, president; Charles J. Langdon, vice-president; Casper G. Decker, secretary; James B. Rathbone, treasurer, all of Elmira. Apply for admission to the hospital to the attending physician, or to the matron or prudential committee. Cases of accident or injury are admitted at any hour, without being first seen by the attending physician.

Elmira City Hospital. Adjoining the court-house.—To receive sick or wounded persons at any time, on the recommendation of the mayor or overseers and superintendent of the poor. No answer has been received.

FLUSHING — QUEENS COUNTY.—Hospital and Dispensary of the Town of Flushing. Incorporated February, 1885, under the general statute. Opened March, 1888. Corner of Parsons and Forest avenues.—For the medical and surgical care of the sick and injured, without regard to religion, color or nationality. Chronic and contagious cases are excluded; but, when the latter disease develops after the admission of the applicant, the patient is cared for in the "Annex." Capacity for thirty. Average number of inmates, twenty-five. Last year over 204 were received and treated. Controlled by a board of trustees and by a medical board. Supported by voluntary contributions, annual subscriptions, and a small amount from the excise fund. I. C. Hicks, president, 49 Main street; Mrs. E. Platt Stratton, vice-president, College Point; Mrs. J. A. Renwick, secretary, Bowne avenue; Mrs. A. S. Thayer, treasurer, Colden avenue. Apply to the physicians in charge at the hospital.

GENEVA — ONTARIO COUNTY.—Church Home of Geneva, on the Foster Swift Foundation. (See class V, division 3.)

The Medical and Surgical Hospital of Geneva, N. Y. Incorporated March 25, 1892, under the general law.—To erect, establish, maintain and operate a general hospital, infirmary or home for the reception, care, maintenance, giving of medical and surgical advice, aid and treatment to persons afflicted with maladies or physical injuries, or physical weaknesses or deformities or infirmities, and a free dispensary, pursuant to the act of the Legislature of the State of New York, March 29, 1889, to be located in the village of Geneva, Ontario county. Controlled by a board of trustees and managers.

GLOVERSVILLE—FULTON COUNTY.—Nathan Littauer Hospital Association. Incorporated June 3, 1891, under the general law, as the "Gloversville Hospital Association." Name changed to present title by the Supreme Court, February 19, 1892.—To erect, establish, maintain and operate a hospital, infirmary or home for the reception, care, maintenance, giving of medical and surgical advice, aid and treatment to persons afflicted with maladies or physical injuries or physical weaknesses or infirmities. Controlled by a board of nine managers. Daniel Hays, president; I. de Fouché, M. D., secretary; W. E. Whitney, treasurer. Apply to the officers at the hospital.

HORNELLSVILLE — STEUBEN COUNTY.—St. James' Mercy Hospital. Incorporated January, 1890, under the general statute. The building and grounds were donated, for the objects named, by the late Rev. James M. Early, rector of St. Ann's Roman Catholic church, of Hornellsville, at the time of his demise, and were opened in Canisteo street, March, 1890.—A general hospital for the relief of suffering humanity requiring medical and surgical treatment and care, irrespective of race, color, creed or financial circumstances. Those patients able to pay are required to do so, but the worthy sick poor of the city and county are received and

HORNELLSVILLE — (Continued).

treated gratuitously on order from the town overseers of the poor, or from county superintendent of poor. Capacity for fifty to sixty. Average number of inmates, eight. Over thirty-nine free patients were cared for last year. Controlled by a board of trustees. Supported by donations, pay patients and \$1,000 per annum from the city for the care of its sick poor. Harlo Hakes, president; Joseph Cameron, secretary; James M. Welsh, treasurer, all of Hornellsville. The hospital is under the care of the Sisters of Mercy. Sister M. de Sales, matron, to whom apply, in person, at any time, or by mail, to the hospital.

ITHACA — TOMPKINS COUNTY.—Ithaca City Hospital.

Incorporated January 22, 1889, under the general statute. Aurora street.—The business of said society shall be to build or rent suitable, to purchase or rent necessary real estate, to equip, maintain and conduct a hospital for the care and treatment of sick, injured and infirm persons, under such rules and restrictions as may hereinafter be prescribed by the by-laws of the society. One hundred and thirty-two persons were cared for last year, of whom nineteen were free patients. Controlled by a board of twenty-one trustees. Supported by pay patients, voluntary contributions, etc. The hospital was donated for said purposes by the Estey family. Apply to the superintendent or physician in charge.

JAMAICA — QUEENS COUNTY.—Jamaica Hospital (The).

Incorporated February 17, 1892, under the general statute.—For the giving of medical and surgical advice to those who may need the same in the village and town of Jamaica, in the county aforesaid, under such rules and regulations as its trustees may adopt, and its operations shall be carried on in the said village of Jamaica. Controlled by a board of nine trustees, to whom apply.

JAMESTOWN — CHAUTAUQUA COUNTY.—Hospital of "The Women's Christian Association of Jamestown, New York,"

JAMESTOWN — (Continued).

which was incorporated May 25, 1885, under the general statute. The hospital is located at Foote's avenue and Allen street.—To improve the physical, intellectual, moral and religious condition, particularly of young women, who are dependent upon their own exertions for support; to found and maintain a boarding-house where respectable women and friends can secure board at a reasonable rate; to found and maintain a hospital for its inmates and such other sick and injured persons as may be placed in its care. Controlled by an executive committee of sixteen members, to any of whom apply.

KINGSTON — ULSTER COUNTY.—City of Kingston Hospital.

Incorporated by special act, chapter 95, Laws of 1889. The building is not yet in operation.—A general hospital, for the medical and surgical care and treatment of the sick poor, admitted on the written order of any member of the executive committee, or of any of the medical staff; private patients are also received. Free medical treatment and advice is given to out-patients, in accordance with the rules which the board shall from time to time establish. No patient shall be excluded from the hospital on account of race, color or creed; but no person is admitted suffering from contagious, infectious or any chronic incurable or malignant diseases. Controlled by a board of managers. Supported by voluntary contributions. George C. Smith, president; R. S. Burtzell, vice-president; Wm. M. Hayes, secretary; Jacob Chambers, treasurer, all of Kingston. Apply for further information to any of the officers.

LANSINGBURGH — RENSSELAER COUNTY.—Leonard Hos-

pital (The). Incorporated January 10, 1893, under the general statute.—To establish, maintain and operate a hospital and infirmary in the village of Lansingburgh, for the reception, care, maintenance, giving of medical and surgical advice, aid and treatment to persons afflicted with maladies, or physical injuries or physical weaknesses, or deformities or infirmities. Controlled by a board of managers, viz.: E. H. Leonard,

LANSINGBURGH — (Continued).

A. E. Powers, Edward Van Schoonhoven, Paul Cook, Edgar K. Betts, R. C. Haskell, Peter B. King, William Groesbeck and Hugh L. Rose.

LOCKPORT — NIAGARA COUNTY —Flagler Hospital. Donated to the city of Lockport by Thomas T. Flagler, Esq. Opened May 15, 1889. Corner of West Main street and Bristol avenue.—For the care of emergency cases of sickness and injury, particularly among the indigent sick of the city who are without homes or means to procure medical relief and assistance. Persons able to pay for board and treatment can also avail themselves of its advantages. Smallpox patients are excluded. Capacity, ten rooms. Average number of patients, three. Controlled by the Board of Health of Lockport. Supported by city funds. Dr. L. W. Bristol and James R. Compton, hospital committee, to whom apply, or to the board of health, or police; and, in cases of extreme injury, directly to the matron, at the hospital.

LONG ISLAND CITY — QUEENS COUNTY.—Astoria Hospital (The). Incorporated March 11, 1892, under the general statute.—For the erecting, establishing, maintaining and operating a hospital for the reception, care, maintenance, giving of medical and surgical advice, aid and treatment to persons afflicted with maladies, or physical injuries, or physical weaknesses, or deformities or infirmities, and the erecting, establishing, maintaining and operating a free dispensary. The name of the city in which the said hospital and dispensary are to be located is the city of Long Island City, in the county of Queens, and State of New York. Controlled by a board of nine managers, whose names are as follows: Garetta P. Havemeyer, Jennet D. Blackwell, Ellen W. Fanning, Christina C. Hallett, Ella J. Moore, Harriet M. Smith, Anna M. Mencken, Gertrude Harison, and Sarah A. Johnson.

St. John's Hospital. Incorporated April, 1891. No. 261 Jackson avenue. Controlled by the Sisters of St. Joseph. No answer has been received from the sisters.

MATTEAWAN — DUTCHESS COUNTY.—Highland Hospital.

Incorporated April 14, 1871, under the general statute. Opened April, 1871.—To establish a hospital in the town of Fishkill, Dutchess county, N. Y., for the reception of the sick and injured, and for rendering to such all necessary care, assistance and medical attention. Contagious and chronic cases are not received. Capacity for eight. Average number of inmates, three. Seventy-one beneficiaries last year, who were cared for during 1,386 hospital days. Patients having the ability shall be required to pay such a sum per week as may be determined by the executive committee, for care, medicines and medical attendance. Controlled by a board of trustees. Supported by voluntary contributions and by a small endowment. Winthrop Sargent, president, Fishkill-on-Hudson; Rev. F. M. Carson, vice-president; Samuel K. Phillips, secretary; Clara S. Finn, treasurer, all of Middletown. Apply to the attending physician.

MIDDLETOWN — ORANGE COUNTY.—Middletown Hospital

Association. Incorporated December 6, 1887, under the general statute. The hospital was opened May 10, 1892.—For the care of the sick and injured and for general hospital work. Payment is expected from patients who are able to pay, but the worthy indigent sick are received and cared for gratuitously. Contagious cases are excluded. Capacity for thirty-nine. Average number of inmates, five. Controlled by a board of lady managers. Supported by pay patients and by voluntary contributions. Harriet L. Clark, president; Sarah J. Sliter and Jane E. Prin, vice-presidents; Ella S. Hanford, secretary; Clara S. Finn, treasurer, all of Middletown. Apply to the matron at the hospital.

MOUNT VERNON — WESTCHESTER COUNTY.—Mount Ver-

non Hospital, 57 Valentine street. Incorporated and opened in May, 1890.—For the care of medical and surgical emergency cases of both sexes. For further information apply at the hospital. No report received.

NEW BRIGHTON — RICHMOND COUNTY.—S. R. Smith Infirmary. Incorporated May 13, 1869, under the general statute. Opened in 1863.—To afford succor to the victims of sudden accident, and also medical relief in cases of temporary illness among those whose circumstances deprive them of the means of proper treatment in their own homes, and for that purpose to establish and maintain a hospital or infirmary for the reception and treatment of such cases and persons. Contagious, consumptive, incurable and delirium tremens cases are not received. Pay patients shall deposit two weeks' board in advance, and no one shall be admitted without a permit, except in cases of sudden casualty. Capacity for sixty. Daily average number of patients, —. Controlled by a board of trustees and a ladies' auxiliary association. Supported by voluntary contributions, pay patients, etc.—Apply to the medical staff at the infirmary for cases of disease, and in case of accident, the patient may be brought by the police or friends.

NEWBURGH — ORANGE COUNTY.—St. Luke's Home and Hospital of Newburgh and New Windsor. Incorporated January 5, 1876, under the general statute. No. 153 Liberty street.—To provide and maintain a home for aged, indigent and infirm persons, and a hospital for the reception, care and medical and surgical treatment of persons needing such care and treatment. It is conducted chiefly as a hospital for the sick and injured, suffering from accident or worthy persons suffering from acute illness, except of a chronic or contagious nature. Board is charged according to the ability of the person to pay, otherwise, free. Capacity for twenty-five patients. Average number, twelve. About two-thirds of the patients are admitted free. One hundred and twenty-five beneficiaries last year, of whom five were aged inmates and 120 free patients. Controlled by a board of managers. Supported by voluntary contributions. Mrs. O. Applegate, president, 165 Grand street, Newburgh; Miss E. J. Appleton, vice-president, New Windsor; Mrs. John L. Rogers, secretary, Balmville; James J. Logan, treasurer, Front street, Newburgh; Mrs. Samuel C.

NEWBURGH — (Continued).

Mills, registrar, 272 Liberty street; Mrs. John W. Matthews, treasurer of "Child's Cot Fund," 263 Grand street, Newburgh. Apply at the hospital, or to one of the executive committee.

NEW ROCHELLE — WESTCHESTER COUNTY.—New Rochelle Hospital Association. Incorporated November 18, 1892, under the general statute.—To give care and medical treatment to the sick, to administer to the injured and provide them with surgical treatment and nursing; and, as its means and opportunities increase, to give the needy and deserving poor all necessary aid and assistance. The association shall be non-sectarian in matters of religion, and physicians of all or any school of medicine or practice shall be welcome to practice, under the rules and regulations of the association, whenever their services are required in carrying out the objects of the association. In all its charitable work the association shall be guided only by the broad principle of humanity; and when sickness, injury, poverty, injustice or cruelty is brought to its attention it shall be its privilege to render all the assistance in its power, without regard to the creed, nationality, color, age or sex of all in need of such assistance. Controlled by a board of fifteen trustees.

NEW YORK CITY (Randall's island).—Adult Hospital of the Department of Public Charities and Correction. Receives and provides medical and surgical relief to the sick and incurable adult paupers who overflow from the city hospital, Blackwell's island, except those which are insane or epileptic. Capacity, 250. Apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

Alms-house Hospital of the Department of Public Charities and Correction. (Blackwell's island.) (See class V, division 1.)

Bellevue Hospital of the Department of Public Charities and Correction (established 1826). Foot of East Twenty-sixth street, East river.—For the destitute sick. Cases of accident or sudden illness are received at any hour, all others

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only by permit of the superintendent of outdoor poor. Capacity 800 beds ; can make provision for 1,200. No contagious diseases received. The cases for all the hospitals (except the Harlem and Fordham Reception Hospitals) in charge of the Department of Public Charities and Correction, are first sent here, the diagnosis of the disease is made by the examining physician, and the patient is assigned to the proper hospital. Non-resident patients of the city and county of New York are charged fifteen dollars a month, payable in advance. Patients are admitted from 10 a. m. to 7 p. m. The hospital maintains the following: Ambulances (with surgeon and appliances) which may be summoned by telegram from any police station. Medical and surgical relief to outdoor poor, supplied at the Out Service Bureau of hospital at foot of East Twenty-sixth street. Apply from 9 a. m. to 5 p. m. to the examining physician or upon an order from William Blake, superintendent outdoor poor, 129 East Eleventh street. Training School for Nurses: Gives two years training to women desiring to become professional nurses; no one is received for training in any specialty. Apply to superintendent at the school. Also Mills Training School for Nurses. For male nurses only; apply to Mills school building at the hospital. (See class II, division 2, and class VII, division 10.)

Beth Israel Hospital Association. Incorporated May 28, 1890, under the general statute. The hospital was opened June, 1891. No. 196 East Broadway.—For the medical and surgical relief of the sick poor, irrespective of creed, of the down town east side district of the city, either in the hospital or in the dispensary, or at their homes. Contagious and chronic cases are not received. Capacity of the hospital, twenty-one beds, all free. Average daily number of indoor patients, seventeen; in the dispensary, sixty. Seven thousand four hundred and fifty patients were treated; 10,920 prescriptions dispensed, and 1,270 visits were made to the sick at their homes last year. Controlled by a board of thirty-six directors. Supported by dues of members and voluntary contributions. J. Sterling, president, 105 West One Hundred and

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Fifth street; A. Katz, financial secretary, 196 East Broadway; M. Alexander, treasurer, 97 East Broadway. Apply for admission to the hospital to B. Claif, superintendent, and at the dispensary, daily, except Sunday, from 12 to 5 p. m.

Chinese Hospital Association. (See under Brooklyn Hospitals in this division.)

City Hospital (late "Charity"). (Blackwell's island.)—For all classes of destitute sick, except contagious diseases, all of which must be referred to the Board of Health. Capacity 1,000 beds. Also maternity ward for convalescent women. Apply to William Blake, superintendent outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

Christopher Columbus Italian Hospital of the City of New York. Incorporated May 19, 1891, under the general statute. No. 41 East Twelfth street.—To provide for and maintain a hospital for the use of Italian people in the State of New York. For the free medical and surgical relief of the worthy sick poor, more especially Italians of both sexes. Receives all cases, except contagious ones. Patients are expected to pay according to their ability. Capacity for fifty beds, four of which are reserved for incurables. Controlled by a board of trustees, and under the charge of the Salesian Missionary Sisters of the Sacred Heart. Supported by voluntary contributions and board of patients able to pay. Apply to the Mother Superior or to the physician in charge at the hospital at any time.

Colored Home and Hospital. First avenue and Sixty-fifth street. (See class V, division 3.)

Emigrant Hospital, Ellis Island. Opened in 1892. Under the management of the United States Government, at the emigrant depot. Capacity, sixty beds. The medical service is performed by the surgeons of the Marine Hospital Service. (See class II, division 3.)

Five Points House of Industry, Infirmary. No. 155 Worth street. (See class III, division 5.)

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Fordham Reception Hospital of the Department of Public Charities and Correction. Opened in 1892. No. 2456 Valentine avenue. Branch of Bellevue Hospital. District covering Fordham, Tremont, Williamsbridge, Kingsbridge and Woodlawn.—For the destitute sick and disabled. Capacity, forty beds. Has also an ambulance service. Apply to the physician in charge, or to any of the police. (See class II, division 2.)

French Benevolent Society of the City of New York. Nos. 320 and 322 West Thirty-fourth street. (See class III, division 8.)

German Hospital and Dispensary in the City of New York. Incorporated as the "German Hospital in the City of New York," April 13, 1861, under the general statute. Amendatory act passed March twenty-six, chapter 234, Laws of 1866, whereby the name was changed to present title. The hospital was opened September 14, 1869. Park avenue and Seventy-seventh street. The Dispensary is at 137 Second avenue.—For the free medical and surgical care and treatment of the sick poor and wounded of every nationality, color or creed, except such as have chronic or infectious diseases. Capacity of hospital, 175 beds, of which upwards of 125 are free. Average number of patients, 150. Last year 2,506 were cared for. The indigent outdoor patients receive free treatment at the Dispensary (opened in 1884) at 137 Second avenue, and a charge of ten cents for each prescription is made to those who are able to pay. Over 27,706 patients were treated and 50,000 prescriptions dispensed last year. There is also a training school for nurses and an ambulance service in connection with the hospital. Controlled by a board of trustees and a medical board. Supported by voluntary contributions, paying patients, endowment of beds, legacies, and interest of invested funds. Theo. Kilian, president, 157 West Thirty-second street; Julius Zeller, secretary, 352 West One Hundred and Twenty-second street; J. Movius, treasurer, 79 Murray street. Apply to the superintendent at the hospital from 10 a. m. to 12 m., and to the physician in charge during dispensary hours.

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German Poliklinik of the City of New York. No. 78 East Seventh street. (See class VII, division 6.)

Gouverneur Hospital of the Department of Public Charities and Correction. Opened in 1885. Gouverneur Slip, corner Front street.— A reception hospital for accidents in that part of the city. Patients are transferred from it to Bellevue Hospital. Capacity, forty-two beds. (See class II, division 2.)

Hahnemann Hospital of the City of New York. Incorporated by special act, March twentieth, chapter 64, Laws of 1875, through the consolidation of the "New York Homeopathic Surgical Hospital, of the city of New York" (incorporated by special act, chapter 695, Laws of 1872), and the "New York Homeopathic Hospital for Women and Children of the City of New York" (incorporated September, 1869, under the general statute), to be known as the Hahnemann Hospital of the City of New York. Amendatory act passed chapter 490, Laws of 1892, whereby the "Western Dispensary of the City of New York" was consolidated with the Hahnemann hospital, and the corporation of the former was dissolved, and its property amounting to nearly \$50,000, was merged in and vested in the said hospital, to be used for the erection of a free Maternity and Children's Ward on the present grounds of the hospital and to maintain a free Dispensary and Training School for Nurses. The hospital is situated on Park avenue, between Sixty-seventh and Sixty-eighth streets. The object of its charter is to provide hospital accommodations for the poor and others who are desirous of being treated homeopathically, and to establish, maintain, manage and conduct in the city of New York a hospital with proper buildings and departments, at which shall be received such persons as may respectively require medical and surgical treatment, and are desirous of being treated in accordance with the homeopathic system of medicine; all patients in said hospital shall be under the professional care of physicians and surgeons skilled in and practicing under the homeopathic system of medicine, who shall be appointed from time to time

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by and subject to removal by board of trustees; and the treatment in said hospital shall always be under said homeopathic system. No contagious cases are admitted. Charge in the wards for those in moderate circumstances, from seven to ten dollars a week; private rooms for pay patients, and wards for charity patients, who receive equal benefits, and which, with board and medical treatment and nursing, are given to them absolutely free. Has also funds for aiding saleswomen, disabled policemen and firemen. All applications for free and partly free beds must be made to the executive committee, through the resident physician. Present capacity of hospital, seventy-five beds; soon to be largely increased. The Dispensary or outdoor service provides gratuitous homeopathic treatment and medicines to the unfortunate and deserving sick poor. In 1891, 252 patients were treated in the hospital, of whom eighty-seven were cared for free and twenty-three made small payments. Controlled by a board of trustees, assisted by the Ladies' Hahnemann Hospital Association. Supported by voluntary contributions, endowments, bequests, annual subscriptions and board of pay patients. Hiram Calkins, president, 147 West Forty-ninth street; Samuel J. Drake, secretary, 64 Broadway; Willis B. Marion, treasurer, 90 South Fifth avenue; C. T. Caldwell, M. D., resident physician, to whom apply at the hospital at any time.

Harlem Reception Hospital and Dispensary, of the Department of Public Charities and Correction (Opened in 1887). No. 525 East One Hundred and Twentieth street. It is a branch of Bellevue Hospital, for the district from Seventy-third street to Harlem river, east of Lenox avenue, and the whole of the twenty-third and twenty-fourth wards.—For the destitute sick, unable to pay for medical aid, in that section of the city. Patients received from 9 a. m. to 6 p. m. Capacity, sixty beds. Has two ambulances, which answer emergency calls in case of accidents. Apply to the resident physician, or to William Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

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Homeopathic Hospital, of the Department of Public Charities and Correction (Ward's island).—For the treatment by homeopathic methods, of male and female patients with all classes of diseases, except contagious and lying-in cases. Apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

House of Relief of the "Society of the New York Hospital."
No. 160 Chambers, which see in this division.

Italian Home (Istituto Italiano). No. 179 Second avenue. (See class III, division 8.)

Lebanon Hospital Association. Incorporated in July 17, 1890, under the general statute. Opened February 23, 1893. Westchester avenue, at One Hundred and Fiftieth street in the twenty-third ward.—To maintain a hospital and convalescent home for all the worthy poor who need fresh air, rest and medical care. Supported by voluntary contributions. Unsectarian. Capacity for 500; but fifty beds only are provided as yet. For further information apply to Jonas Weil, president of board of directors, 327 East Fifty-first street, or to Michael Peabody, vice-president, 182 Broadway; David Block, secretary; Leo Hutter, treasurer.

Lutheran Hospital Association of the City of New York and Vicinity, located in Brooklyn. (See class VII, division 2.)

Manhattan Dispensary and Hospital. Incorporated in 1862 as the Manhattan Dispensary. Amsterdam avenue and One Hundred and Thirty-first street. Opened as a hospital in 1884, but not yet incorporated as such.—To give free medical and surgical treatment to the worthy sick poor of New York city and vicinity. Those able to pay are charged one dollar per day in the wards, and private patients according to their accommodations. Incurable and contagious cases are not admitted. Capacity, forty beds. The Dispensary gives free treatment and medicines to the worthy outdoor poor who are unable to pay. During last year over 560 patients were cared for in the hospital and 6,825 in the dis-

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pensary. The hospital maintains also an ambulance service for the district from West Eighty-sixth street to Yonkers and Williamsbridge, and from Lenox (Sixth) avenue to the North river, including the twenty-sixth, thirtieth, thirty-second and thirty-fifth police precincts. Controlled by a board of trustees. Supported by charitable contributions and by patients' board. J. Hood Wright, president; Edward D. Jones, secretary; T. C. Buck, treasurer. Apply to the superintendent at the hospital from 11 a. m. to 7 p. m. Emergency cases are received at any hour.

Mount Sinai Hospital. Incorporated January 5, 1852, under the general statute. Amendatory acts passed April 16, 1857, and April 17, chapter 627, Laws of 1866. Opened in 1852. Lexington avenue between Sixty-sixth and Sixty-seventh streets.—A general hospital for the medical and surgical care of the sick admitted to its wards, of all creeds and classes, except those suffering from infectious or contagious diseases. Free to the worthy indigent sick; board from seven dollars and upwards for those able to pay. Cases of accident are admitted gratuitously at any hour. Capacity for 200 beds. Average number of patients, 179. Over 2,860 cases were treated last year. The Dispensary at No. 151 East Sixty-seventh street is for the free treatment of the worthy sick and indigent outpatients, irrespective of creed or nationality, who are unable to pay for either physician or medicine. It has Eye, Ear and Throat departments, and is open daily, except Sundays and legal holidays, from 1 to 4 p. m. Over 24,528 persons treated last year. The outdoor relief and district corps of physicians care for cases outside the hospital and furnish nurses at the homes of the sick poor. Over 330 patients visited and cared for during the year. There is maintained also the Mt. Sinai Training School for Nurses in the dispensary building. Controlled by a board of twenty-three directors. Supported by the members' fees, pay of patients, voluntary contributions and interest of invested funds. Hyman Blum, president; Isaac Wallach,

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vice-president; Henry Goldman, honorary secretary; Joseph L. Scherer, assistant secretary, 218 East Seventy-ninth street; Samuel M. Schafer, treasurer; Theodore Hadel, superintendent. Apply for admission at the hospital daily from 12 to 2 p. m. Sundays from 10 a. m. to 12 m., or, apply at the office of Dr. D. H. Davison, 171 East Seventy-eighth street, from 8 to 9.30 a. m., and 6 to 7 p. m.

New York Homeopathic Medical College and Hospital. Eastern Boulevard and Sixty-third street. (See class VII, division 2.)

New York Polyclinic. Incorporated in 1882, under the general statute. Organized in 1880. Nos. 214 and 216 East Thirty-fourth street.—A school of clinical medicine and surgery for practitioners, to which medical missionaries are admitted to its privileges at one-half the usual rates charged to other matriculates. In connection with the polyclinic and maintained by it is the "New York Polyclinic Hospital," incorporated in 1888, which occupies the upper floors of 214 and 216 and the whole of 218 East Thirty-fourth street, and which contains six wards and fifteen private rooms, where all classes of cases, except contagious diseases, are admitted. The indigent sick poor receive medical and surgical treatment and care gratuitously. Total capacity, sixty beds. From 12,000 to 15,000 patients are treated annually. The Free Dispensary of New York Polyclinic, incorporated in 1882, under the general statute, provides free medical advice and medicines to the poor only who are unable to pay, and is open daily, except Sundays and holidays, from 9 a. m. to 5 p. m. Over 20,000 cases cared for last year. The Polyclinic is controlled by a board of directors. Supported by private subscriptions. Charles Coudert, president of the board of directors; W. Gill Wylie, M. D., president; Emil Gruening, M. D., vice-president; J. A. Wyeth, M. D., secretary, and V. P. Gibney, M. D., treasurer of the faculty. Apply to the superintendent for admission to the hospital from 9 a. m. to 5 p. m., and to the Dispensary during the same hours.

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New York Post Graduate Medical School and Hospital (and Babies' Wards). Incorporated first under the general statute. Reincorporated by special act, chapter 438, Laws of 1886. Amendatory act, chapter 292, Laws of 1889. Present address, No. 236 East Twentieth street. To remove to a new large building, corner of Second avenue and Twentieth street, during the summer of 1893.—Founded by members of the post graduate faculty of the University of the City of New York, to offer systematic courses of clinical instruction to graduates in medicine, and to give special advantages in treatment to the sick poor, who are unable to pay at all, or who can give only a small amount for medical care. The hospital for the treatment of general diseases (excepting contagious or infectious cases) has a ward for men, one for women, and an Orthopedic ward for children, and an entire building is devoted to the Babies' Wards, in which are received sick babies of the poor, to be cared for free of charge. This was the first hospital to receive children under 3 years of age. Total capacity of present hospital and wards, 144. Average number of inmates, eighty. During the year 1891, 888 house patients, including 301 babies and 587 adults, were treated. The Dispensary gives free treatment and medicines to the sick poor and in which over 15,800 patients were cared for and 424 were visited at their homes during the year. The Maternity department, at 543 East Thirteenth street, cares for poor women, and provides gratuitously medical aid and nursing at their homes during the subsequent period. There is also a Training School for Nurses, at 163 East Thirty-sixth street, connected with the medical school and hospital. Controlled by a board of directors. Supported by fees for courses, board of patients, voluntary contributions and endowments. D. B. St. John Roosa, M. D., 20 East Thirtieth street; Clarence C. Rice, M. D., secretary, 81 Irving place; L. Bolton Bangs, treasurer, 31 East Forty-fourth street. Apply for admission at any time at the institution, or by letter to the secretary or superintendent.

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Presbyterian Hospital, in the City of New York (The). Incorporated by special act, February 28, chapter 15, Laws of 1868. Opened October 10, 1872. Madison avenue, between Seventieth and Seventy-first streets.—For the establishment, support and management of an institution for the purpose of affording medical and surgical aid and nursing to sick and disabled persons of every creed, nationality and color. The public religious services in the hospital shall be in conformity with the doctrines and forms of the Presbyterian or Reformed church. No persons suffering from contagious, infectious diseases are admitted, or shall any patient whose case is judged to be incurable unless there be urgent symptoms which, in the opinion of the attending physician, are capable of being relieved; also, no case of primary syphilis or gonorrhoea shall be admitted, unless under exceptional circumstances, and with the approval of the executive committee. Capacity of hospital, 330 beds. Open for 150 patients only at present. A number of beds have been endowed by persons, who have the right to nominate patients to occupy them; other patients are charged seven dollars per week in the wards if able to pay, but no person is refused on account of inability to pay. Patients must apply in person, and are admitted from 9 a. m. to 5 p. m., to the house physician or surgeon; if unable to do so, they shall be visited and examined by one of the hospital staff. Patients may be admitted on the recommendation of a manager, or any physician or surgeon of the hospital, after examination, and upon the approval of the visiting committee. Patients living out of the city must send, with their application for admission, a certificate of some respectable physician, stating the nature and probable duration of the disease. Cases of emergency are received at any hour of the day and night. During last year 4,433 patients were received, of whom 4,174 were treated free. The Dispensary, corner of Seventieth street and Madison avenue, cares for the outdoor patients, 9,349 of whom were treated last year, and for whom over 27,000 prescriptions

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were dispensed, a small charge being made to those able to pay. The ambulance service responded to 1,730 calls. The hospital now maintains a Training School for Nurses. Controlled by a board of thirty-two managers. Supported by voluntary contributions, donations, bequests, endowed beds, by paying patients in hospital and dispensary, and by collections in the Presbyterian churches of New York city. John S. Kennedy, president; Heber R. Bishop, vice-president; Walter Edwards, recording secretary, 120 Broadway; George E. Dodge, corresponding secretary, 45 Broadway; Elbert A. Brinckerhoff, treasurer, 18 Nassau street; W. H. Draper, M. D., president of medical board; Rev. Thomas G. Wall, A. M., chaplain; C. Irving Fisher, M. D., superintendent; James S. Knowles, assistant superintendent and superintendent of dispensary; Halsey L. Wood, M. D., physician in charge of dispensary. Apply as stated above.

Roosevelt Hospital. Incorporated by special act, February 4, 1864. Opened November 2, 1871. Block bounded by Fifty-eighth and Fifty-ninth streets and Ninth and Tenth avenues.—For the relief of sick and diseased persons suffering from acute diseases and injuries; also, largely for operative cases. The needs of the applicant and the capacity of the hospital to accommodate are considered, but all the beds are free to those who have very limited or no means, and a reasonable charge for board is made for such as can pay. Contagious diseases and chronic cases are not admitted. Present capacity of the hospital, which is built chiefly on the pavilion plan, is 176 beds. Daily average, about 155. During 1891, 2,704 patients were cared for in the wards, of whom all but 316 were entirely free, and 3,465 in the accident-room who did not require ward treatment. In addition to this, 92,341 visits were made by patients to the out-patient department or Dispensary, for whom 74,355 prescriptions were dispensed, and for which a small charge was made to those able to pay. The Ambulance service responded to over 1,470 calls. In connection with the hospital is the "Syms Operating Theater,"

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erected through the munificent gift of \$350,000, of the late Wm. J. Syms, and the "McLane Operating-room," erected by Dr. James W. McLane, in memory of his son. Applications for admission to the hospital must be made in person to the house physician, from 9 a. m. to 5 p. m., or, if by reason of severe sickness, the patients are unable to do so, they are visited at their homes by a physician or surgeon on duty. Patients suffering from severe accidents or serious illness are admitted at any hour of the day or night. Patients who live out of the city must send, with their application, a certificate of some respectable physician, stating the nature and probable duration of their disease. Controlled by a board of trustees. Supported by endowment, receipts from paying patients and prescription fees, etc. John M. Knox, president, 145 Broadway; James A. Roosevelt, vice-president, 33 Wall street; W. Irving Clark, secretary, 127 East Thirtieth street; Richard Trimble, treasurer, 59 East Twenty-fifth street; James B. Lathrop, superintendent, to whom apply, in person or by written application, from 9 a. m. to 5 p. m.

St. Francis Hospital of "The Sisters of the Poor of St. Francis," which see in this division.

St. Elizabeth's Hospital. Incorporated in 1870, under the general statute. No. 225 West Thirty-first street.—For medical and surgical aid to the sick and disabled, without distinction as to sex, religion, nation or color. Contagious, insane and violent cases not admitted. Capacity, ninety beds. Board, eight dollars and ten dollars per week in wards, and from twelve dollars to thirty dollars per week in private rooms. Physicians can send their patients there and have full care of them. Under charge of the Sisters of the Third Order of St. Francis Assisium. Supported by board of patients and voluntary contributions. Apply to Mother Superior at the hospital at any time.

St. Luke's Hospital. Incorporated May 1, 1850, under the general statute. Amendatory acts passed March 28, 1851; March 2, 1854; February 7, 1856; April 15, 1870. Opened

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May, 1858. Corner Fifth avenue and Fifty-fourth street. The new buildings in course of erection are located on Morningside drive, between West One Hundred and Thirteenth and One Hundred and Fourteenth streets.— To afford medical and surgical aid and nursing to sick or disabled persons, and also to provide them, while inmates of the hospital, with the ministrations of the gospel, agreeable to the doctrines and forms of the Protestant Episcopal Church. For all those who are sick with acute, curable and non-contagious diseases, without distinction of race and creed; chronic and incurable patients are received at discretion, but are not permanently provided for. Has a ward for consumptives, since the active work of the "House of Rest for Consumptives," formerly at Tremont, was assumed by this hospital. Contagious, epileptic, opium, alcoholic, venereal, incurable or offensive cancer cases are excluded. Board in general wards, seven dollars per week for adults, and four dollars per week for children between 2 and 12 years of age, payable in advance. Free to those certified as unable to pay and who are worthy of receiving charitable relief. Application for admission of non-resident patients must be accompanied by a certificate from a responsible physician. Capacity for 220 beds. Average number of inmates, 180. During the year 1891, over 1,591 free patients were cared for and given 54,333 days of hospital treatment. Applications for admission are received daily except Sunday, at the hospital, from 10 a. m. to 5 p. m., or, if too sick to apply in person, patients will be examined by a physician at their homes. Cases of sudden injury, requiring immediate care, are received at any hour at the accident gate, West Fifty-fifth street, near Fifth avenue. The hospital also maintains a Training School for Nurses; candidates must be of good, moral character, in sound health, and from 23 to 35 years of age. Controlled by a board of managers. Supported in part by voluntary contributions, by paying patients, and by endowments. George McCulloch Miller, president,

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80 Broadway; Benoni Lockwood, secretary, 16 Exchange place; Gordon Norrie, treasurer, 41 Wall street; Rev. George S. Baker, D. D., pastor and superintendent, to whom apply at the hospital, or by letter.

St. Mark's Hospital of New York City. Incorporated March 7, 1890, according to special act, passed March 29th, Chap. 95, Laws of 1889. Opened March, 1890. No. 66 St. Mark's place; to remove to 177 Second avenue.—To erect, establish, maintain and operate a hospital for the reception, care, maintenance, giving medical and surgical advice, aid and treatment to persons afflicted with maladies or physical weaknesses or deformities or infirmities, and the property of said corporation, both real and personal, shall be used exclusively for the said purposes, and the said corporation shall and do actually render medical and surgical aid, advice and treatment to poor persons, without charge therefor, and shall adhere to the theory and practice of medicine, known as the "Regular School system." Unsectarian, and patients of all creeds, races, nationalities and walks of life, are admitted. No contagious cases received. Present capacity, thirty-five beds. Average number of patients, thirty. From March, 1890, to March, 1891, forty-three free patients and forty patients who were members of lodges and sick benefit societies and who only paid a partial amount for aid of maintenance, and 138 patients, who paid less than one dollar per day for board, were cared for. Controlled by a board of managers. Supported by voluntary contributions and board from pay patients. Ferdinand Motz, president, 80 Broad street; Leonard Weber, M. D., vice-president, 25 West Forty-sixth street; Fred'k A. Botty, secretary, 1640 Avenue B; D. McLean Shaw, treasurer, 206 Broadway; Mrs. F. Krieg, superintendent, to whom apply, or to the physician in charge.

St. Vincent's Hospital of the City of New York. Incorporated in April, 1870, under the general statute. Amendatory act passed in 1871. Opened in November, 1849. No. 153 West Eleventh street.—For the medical treatment, maintenance,

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care, and nursing of diseased, sick or indigent persons of both sexes, irrespective of religious creed. Ward patients, if able to pay, are charged seven dollars a week and upwards. No contagious cases admitted, and chronic patients are not retained longer than treatment is necessary for their relief. Capacity for 170 beds. Average number of inmates, 140. Last year 2,530 patients were treated, 1,966 ambulance calls answered and 674 outdoor patients cared for in the Dispensary. Controlled by a board of trustees, and advisory medical board, and the Sisters of Charity, in whose charge is the hospital. Supported by board of patients and voluntary contributions. Archbishop Corrigan, director; Eliza Sweeney, president, Mt. St. Vincent on the Hudson; Mary C. Dodge, secretary; Sarah Gilhooly, treasurer, at the hospital; John A. McCreery, secretary, and John O'Brien, treasurer of the medical board. Apply to the house physician or surgeon, or to the Mother Superior at the hospital, from 9 a. m. to 6 p. m. Accident cases are received at any hour.

Sisters of the Poor of St. Francis. A community incorporated under this title by special act, chapter 201, Laws of 1866, which maintains the St. Francis Hospital, opened in 1865, at Nos. 603 to 617 East Fifth street, between Avenues B and C.—A general hospital in which the worthy sick and injured poor are cared for free, irrespective of creed, color or nationality. Pay patients are received at moderate rates. Contagious, incurable, insane and lying-in cases are excluded. Capacity for 240 beds. Average number of patients, 225. Last year there were 2,574 free patients. In connection with the hospital is a Dispensary, No. 605 East Fifth street, for out-service among the worthy poor of the neighborhood. Outdoor relief, chiefly in food, is also administered on a limited scale to the poor of the vicinity. The hospital is controlled by the community of the Sisters of the Poor of St. Francis. Supported by charitable contributions and the board of paying patients. Apply to Sister Joachim, superioress, or to the admitting physician personally or through a friend at

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the hospital from 9 to 10 a. m. and from 2 to 3 p. m. Emergency cases are received at any hour. The Sisters also maintain "St. Joseph's Hospital," at East One Hundred and Forty-third street, between Brooke and St. Ann's avenues, for consumptives and that class of patients who are not admitted to the ordinary hospitals. For further information relating to this institution see Special Hospitals.

Society of the New York Hospital. Incorporated June 13, 1771, under the charter by George III of Great Britain. Amendatory acts passed March 2, 1805; March 14, 1806; March 9, 1810; March 23, 1810; April 17, 1816; April 17, 1828; March 20, 1828 March; 1, 1850; May twenty-eighth, chapter 466, Laws of 1875; May third, chapter 244, 1879; June thirteenth, chapter 462, 1889. No. 8 West Sixteenth street.—For relieving the diseases of the indigent and preserving the lives of many useful members of the community. Maintains the "New York Hospital," opened January 3, 1791. Nos. 7 to 21 West Fifteenth street.—For the medical and surgical treatment of pay and free patients, afflicted with all diseases except those which are contagious and chronic. Capacity of the hospital for 175. Average number of inmates, 166. Patients pay according to their ability from one dollar per day and upwards. Connected with the hospital is a Dispensary or out-patient department in the basement, open daily, except Sundays and legal holidays, at 2 p. m. "House of Relief," opened in 1875. No. 160 Chambers street.—For the temporary care and treatment of emergency cases occurring in the lower part of the city, both of indoor and outdoor patients, to whom the service here is absolutely free, and who may apply at any time at the hospital. "Bloomingdale Asylum" for the insane. Present location, One Hundred and Seventeenth street, between Amsterdam avenue and the Boulevard. It is expected to remove the insane department to the new building at White Plains, N. Y., as soon as the decision is made by the Court of Appeals as to the application of the amendatory tax exemption law of 1889 to this property. For the

NEW YORK CITY — (Continued).

treatment of the insane. Terms by arrangement. Capacity for 300. Average number of inmates, 306. Apply for admission to the asylum committee at 8 West Sixteenth street, or to the medical superintendent at the asylum. The Society also maintains an Ambulance service at the New York Hospital and House of Relief, and a Training School for Nurses at 6 West Sixteenth street. Thirty-six thousand seven hundred and eighty-four patients were treated in all the departments in 1890. Controlled by a board of twenty-six governors. Supported by income from real estate, board of patients, etc. Merritt Trimble, president; Henry W. Crane, secretary; Cornelius N. Bliss, treasurer; George P. Ludlum, superintendent of the hospitals, and Samuel B. Lyon, M. D., medical superintendent of Bloomingdale Asylum. Apply to the superintendent at 7 West Fifteenth street.

Trinity Hospital of Trinity Parish. Not separately incorporated. No. 50 Varick street. For the sick poor of the parish and when there is room, patients are received from outside. No contagious and obstetric cases are received. The ward beds are free. Controlled by the Trinity Church Corporation. Sister Eleanor, superintendent, to whom apply.

United States Immigration Service. Ellis island, New York harbor; city office, Barge Office building, Battery park. (See class II, division 3.)

Woodstock Hospital of the City of New York. Incorporated September 10, 1891, under the general statute. Opened December, 1891, at 815 Union avenue, near Westchester avenue. (This hospital is associated with the Eclectic Medical College and Free Dispensary, 235 East Fourteenth street.) To found, carry on and manage an institution, wherein medical and surgical treatment, and hospital attendance shall be provided for persons in need thereof, and furnish the same gratuitously, to those unable to pay for the same, and to perform all other functions appertaining to a hospital and dispensary. Cares for the worthy poor, upon recommendation of a reputable physician, irrespective of race, color or creed.

NEW YORK CITY — (Continued).

No contagious diseases received. Capacity, ten beds. Average number occupied, eight. Cared for seventeen cases from December 1, 1891, to March 1, 1892. Controlled by a board of trustees. Supported by voluntary contributions. August F. French, M. D., president, 228 East Twenty-third street; G. W. Boskowitz, M. D., vice-president, 40 East Forty-first street; Alexander Rixa, M. D., secretary, 1268 Lexington avenue; Robert Kunitzer, M. D., treasurer, 342 East One Hundred and Sixteenth street. Apply to George J. Olsson, M. D., house physician at the hospital, or to any of the officers.

Workhouse Hospital, of the Department of Charities and Correction (Blackwell's island).—For the sick inmates of the workhouse only. Capacity, ninety-three beds. (See also class II, division 2.)

OGDENSBURGH—ST. LAWRENCE COUNTY.—Ogdensburgh City Hospital and Orphan Asylum. (See class V, division 3.)

OSWEGO — OSWEGO COUNTY.—Oswego Hospital. Incorporated January 11, 1881, under the general statute. Opened May 1, 1881. West Fourth street.—For the care of the sick and to provide a place where they can receive attention and for nursing and medical attendance. Any one is received for treatment after an examination by and a recommendation from one of the hospital medical staff. Each applicant is expected to pay for the necessary treatment and nursing according to his ability; but the indigent sick are received free for a period not longer than two months, except upon a special recommendation. The charge for support of patients sent to the hospital by the commissioners of charity or overseers of the poor, from the city or county, is made to the authority sending them. Cases of accident or injury are received at any time; but contagious, incurable, chronic and maternity cases are excluded. Capacity, forty beds. Average number of patients, nine. Last year 111 were cared for. Controlled by a board of thirty trustees. Supported by voluntary contributions and board for charity, pay and private patients. Mrs.

OSWEGO — (Continued).

Sidney Van Auken, president, 134 East Second street; Mrs. C. McFarlane, of 46 West Cayuga street and Mrs George De Forest, of 163 East Sixth street, vice-presidents; Mrs. J. B. Alexander, secretary, 33 West Third street; Mrs. William P. Judson, corresponding secretary, 144 West Fifth street; Mrs. J. B. McMurrich, treasurer, 140 West Fifth street. Apply for admission to the attending physician, subject to the approval of the trustee in charge.

PEEKSKILL — WESTCHESTER COUNTY.—Helping Hand Association (Hospital). Incorporated April 22, 1889, under the general statute. No. 17 Hudson avenue.—To carry on benevolent, charitable and missionary work in the village of Peekskill, in such manner as may seem to the directors to be suitable and proper. The hospital provides for the medical and surgical cases of both sexes. Also maintains a free Dispensary for outdoor patients. Controlled by a board of directors and managers. Apply to the hospital, or to any member of the committee for further information.

POUGHKEEPSIE — DUTCHESS COUNTY.—Vassar Brothers' Hospital in the city of Poughkeepsie. Incorporated June 6, chapter 298, Laws of 1882. Amendatory acts passed April 23, chapter 290, 1883. Opened April, 1887.—A general hospital for the residents of Poughkeepsie and the State at large. No incurable, alcoholic, contagious, infectious and malignant diseases are received. Capacity for forty-four. Average number of patients, twenty-five. Two hundred and thirty-nine were cared for last year. Controlled by a board of trustees. Supported by an endowment fund. Joseph M. Cleveland, M. D., president; B. M. Fowler, secretary; Oliver H. Booth, treasurer; Guy C. Bayley, M. D., superintendent, to whom apply at the hospital.

ROCHESTER—MONROE COUNTY.—Hargous Memorial Hahne-mann Hospital. Incorporated April 3, 1889, under act approved by the Legislature March 30, 1889. The hospital

ROCHESTER — (Continued).

was opened in May, 1889. Oakland street.—For the establishment and maintenance of a homeopathic hospital devoted solely to the practice of pure homeopathy, for all who are sick. Gratuitous treatment and care is rendered to sick indigent patients who must make application to the charity committee; Dr. J. A. Bugler, chairman. Capacity for thirty patients. Two free beds. Controlled by a board of trustees. Supported mainly by subscriptions. G. W. Loomis, president; M. H. Briggs, vice-president; W. H. H. Rogers, secretary; J. W. Moore, treasurer; all of Rochester.

Rochester City Hospital. Incorporated by special act, chapter 233, Laws of 1847. Opened February, 1865. West Main street, between Reynolds and Prospect streets.—For the purpose of establishing and maintaining a public hospital in the city of Rochester. An amendment was passed by special act chapter 547, Laws of 1881, for the purpose of establishing and maintaining a public hospital in the city of Rochester, and organizing a Training School for educating nurses, to whom diplomas may be granted when properly educated and qualified. And said corporation may receive gifts, grants, devices and bequests, which, at the will of the donor, are limited to the uses and purposes of such training school. Capacity for 200. Average number of patients 125. Controlled by board of directors. Supported by city and county appropriations, board of patients and voluntary contributions. Apply to the superintendent at any time.

Rochester Homeopathic Hospital. Incorporated by special act, chapter 453, Laws of 1887. Opened in September, 1889. No. 233 Monroe avenue.—To establish and maintain in the city of Rochester, in the county of Monroe and State of New York, a Hospital and Dispensary at which shall be received such persons as may require medical and surgical treatment, and where medicines may be provided and dispensed for their benefit, and where they may receive all necessary care and suitable medical and surgical treatment. To alleviate

ROCHESTER — (Continued).

suffering from sickness or injury without charge to patients unable to pay. No contagious cases received. Maintains also a Training School for Nurses. The "Ladies' Aid Association" rendered great assistance to the managers of the hospital, in whose wards, during the first year, were admitted 430 patients, 120 of whom were non-paying patients who received 3,990 days of hospital treatment. Controlled by a board of governors and a board of supervisors composed of thirty ladies. Supported by voluntary contributions and endowments. Silvanus J. Macy, president; Hiram W. Sibley, vice-president; David Hoyt, secretary; James S. Watson, treasurer of board of governors; T. C. White, M. D., president of medical and surgical staff; Mrs. Hiram Sibley, president of board of supervisors. **Apply to the superintendent at the hospital or to the medical staff.**

Rochester St. Mary's Hospital of the Sisters of Charity. Incorporated October 7, 1857, under the general statute. Amendatory act, chapter 273, Laws of 1871. Opened in September, 1857. Corner of West avenue and Genesee street.—To maintain a general hospital for all who may apply, provided they are sick. No smallpox or insane patients are admitted. Capacity for 250. Average number of inmates, 200. Seven hundred and fifteen patients were treated last year. Controlled by a board of trustees, consisting of five citizens. Supported by charitable contributions, appropriations from the city and county for the care of their indigent sick, and by board from private patients. Sister Marianno Carney, president; Sister Agnes Sheehan, secretary; Sister M. Gertrude Kelly, treasurer. **Apply to the hospital at any time.**

ROME — ONEIDA COUNTY.—Rome Hospital. Incorporated March 24, 1884, under the general statute. Opened April 3, 1884. East Garden street.—To provide and maintain a hospital in the city of Rome for the care and cure of such sick and injured persons there, as may have claims on common humanity for assistance and relief. Patients unable to pay

ROME — (Continued).

are received without charge, but contagious and chronic cases are excluded. Capacity for twenty-five beds. Average number occupied, eight. Last year, thirty-seven persons were admitted, twenty-five of whom were treated gratuitously. Controlled by a board of twenty-one lady trustees. Supported by voluntary and solicited contributions. Mrs. H. M. Lawton, president; Mrs. A. Sanford, senior vice-president; Mrs. George B. Selden, secretary; Mrs. George Barnard, treasurer. Apply in person or through friends at any time to any of the trustees, committee on admission, the attending physician, or in emergency to the matron at the hospital. Accidental cases are received at any hour.

SCHENECTADY — SCHENECTADY COUNTY.—Ellis Hospital of the Hospital Association in the City of Schenectady. Soon to be opened. (See the next entry in this division.)

Hospital Association of the City of Schenectady. Incorporated July 28, 1891, under the general statute. The institution is not yet opened; but is designed to accommodate about thirty inmates.—The objects are to erect and maintain in the city of Schenectady, a hospital to be known as the "Ellis Hospital," for the reception and gratuitous treatment of sick residents of the city who are unable to procure proper medical care and attention; to maintain a free dispensary and a home for aged men. Controlled by a board of managers. Supported by voluntary contributions. Alonzo P. Strong, president; Rev. J. Philip B. Pendleton, vice-president; Rev. John L. Reilly, secretary; John J. Hart, treasurer, all of Schenectady.

SING SING — WESTCHESTER COUNTY.—Ossining Hospital Association. Incorporated December, 1888, under the general statute. Orchard street.—Contagious, chronic and incurable cases are not received. Capacity of hospital, twenty to thirty beds. Average number occupied, six. Controlled by a board of trustees and a board of lady managers. Supported by voluntary subscriptions, etc. George Jackson

SING SING — (Continued).

Fisher, M. D., president; Wm. H. Helm, M. D., vice-president; Abraham S. Underhill, secretary; Edwin A. McAlpin, treasurer. Apply for admittance to the physician in charge, or to the matron at the hospital, or to any of the lady managers.

SYRACUSE — ONONDAGA COUNTY.—House of the Good Shepherd. Incorporated March 31, 1872, under the general statute. Opened in 1872. No. 106 Marshall street.—For the care of the sick and needy, regardless of creed, who are received free, when unable to pay a small sum. Contagious and alcoholic cases are not admitted. Capacity for sixty. Average number of inmates, forty. Last year 500 beneficiaries were cared for. Maintains, also, a training school for nurses. Controlled by a board of trustees. Supported by voluntary contributions and endowments. Rt. Rev. F. D. Huntington, D. D., president; George J. Gardner, secretary; D. O. Salmon, treasurer, all of Syracuse. Apply to the house surgeon or matron at any time.

St. Joseph's Hospital. (Under the supervision of the Sisters of the Third Franciscan Order.) Incorporated February 21, 1870, under the general statute and the amendments thereto. Opened in May, 1869. Union avenue, corner Prospect avenue.—To care for the sick and disabled indigent persons in the city of Syracuse, irrespective of religious belief, nationality or color, if the patient can be in any way helped or benefited. No contagious cases are received. Capacity for 120. Average number of inmates, sixty. Last year 461 patients were received, of which 153 were paying patients, 241 were chargeable to the city, county and towns, and sixty-seven were beneficiaries. Controlled by the Sisters of St. Francis. Supported by voluntary contributions, board of patients, collections by the Sisters, and appropriations from the city, county and towns of county. Mother M. Delphina, president; Sister M. Johanna, secretary; Sister M. Genevieve, treasurer; Mother M. Bernadina and Sister M. Elizabeth. Apply to the Superioress in charge.

SYRACUSE — (Continued).

Sisters of Charity of the House of Providence. Grand avenue.
(See class V, division 2.)

TARRYTOWN — WESTCHESTER COUNTY.—Tarrytown Hospital Association (The). Incorporated May 7, 1892, under the special act, chapter 95, Laws of 1889. Formerly a department of the "Provident Association of Tarrytown."—For the erecting, maintaining, establishing and operating of a hospital for the reception, care, maintenance, giving of medical and surgical advice, aid and treatment to persons afflicted with maladies or physical injuries, weaknesses, deformities or infirmities. Persons suffering from accident or in emergency are admitted unconditionally any hour of the day or night. Other patients shall be admitted to the hospital on an order from a member of the medical staff or from a member of the executive committee. No infectious or contagious diseases shall be admitted, nor shall any incurable or chronic case be received except for temporary treatment. Patients are charged six dollars a week for ordinary service, except such as are admitted to the endowed beds, but the worthy indigent are cared for free, upon approval of the executive committee. Controlled by a board of lady managers, with an advisory board of gentlemen. Supported by voluntary contributions, endowments and members' fees. Mrs. W. H. Morse, president; Mrs. H. L. Douglas, vice-president; Miss S. J. Dix, secretary; Mrs. G. B. Newton, treasurer. Apply for admission to any member of the executive committee.

TROY — RENSSELAER COUNTY.—Marshall Infirmary (and Rensselaer County Lunatic Asylum). Incorporated June 20, 1851, under the general statute. Opened in 1854.—For the reception and treatment of the sick and insane, except those afflicted with contagious diseases. Capacity for 180. Average number of inmates, 150. Controlled by a board of governors. Supported by board of patients and by donations.

TROY — (Continued).

Joseph D. Lomas, M. D., superintendent; Melvin Sheldon, M. D., medical assistant. Apply to the members of the medical board.

Troy Hospital Association. Incorporated in 1847, under the general statute. The institution was opened in 1851. Eighth street, head of Fulton street.—For the care of all sick or injured who apply for medical and surgical treatment. Admitted on order from any overseer of poor, in the State of New York; but when a case is urgent, the patient is taken as a charity case. No contagious or skin diseases received. Has also an outdoor or dispensary service. Average number of patients, 150. Hospital capacity for 175. Average number of patients, eighty. Nine hundred and twenty were cared for last year. Controlled by the Sisters of Charity, who reside on the premises. Supported by appropriations from the city and counties, and by voluntary contributions. Apply to Sister Gabriella, sister-in-charge at the hospital.

UTICA — ONEIDA COUNTY.—Faxon Hospital. Incorporated by special act, March 14th, chapter 88, Laws of 1873. Amendatory act passed June 7th, chapter 407, Laws of 1889. Opened July 1, 1873. Perkins avenue, now Sunset avenue.—To establish, support and maintain in the city of Utica, county of Oneida, a hospital for the sick and disabled, wherein such persons as need it may receive all necessary care, suitable medical and surgical treatment under such by-laws and regulations as the board of trustees thereof may from time to time establish, and the said corporation may for the purposes thereof, take and hold, in trust or otherwise by purchase, gift, grant, devise and bequest, real and personal estate, to the amount of \$300,000. Patients are charged according to their ability to pay, and the charge for the indigent sick is fixed proportionately. Incurable and contagious cases are not admitted. Capacity for fifty. Average number of patients, twenty. Controlled by a board of forty lady trustees. Supported by board of patients and

UTICA — (Continued).

endowment fund of \$25,000, given by Mr. Theodore S. Faxton, who built and gave the building for the purposes named. Mrs. W. M. Storrs, president, 703 Genesee street; Mrs. W. H. Millar, corresponding secretary, 345 Genesee street; Miss A. G. Dickinson, recording secretary, 6 Rutgers street; Miss Caroline Gridley, treasurer, 21 Hopper street. Apply for admission to the hospital committee, Mrs. J. G. Brown, 255 Genesee street; Mrs. S. M. Lindsley, 31 Rutger street, and Miss F. A. Whedon, 20 Hopper street.

St. Elizabeth's Hospital and Home. Incorporated February 7, 1870. Opened in December, 1866. No. 172 Columbia street. The free Dispensary for the poor was opened in connection with the hospital in 1872.—To maintain a hospital for poor, sick, aged, infirm and disabled persons, without regard to color, race, nationality or creed, and who are residents of Utica and vicinity. Capacity for eighty-three. Average number of inmates, thirty-nine. Over 653 beneficiaries last year, for whom no remuneration was received. In the hospital 380 patients were cared for, of which ninety-seven were free; in the dispensary 387 persons received treatment, 321 visited in their homes and 169 were otherwise assisted. Controlled by a board of trustees and by a staff of thirteen medical and surgical physicians. The whole institution is in charge of the Sisters of St. Francis. Supported by solicited contributions and alms, and the board paid by those who are willing and can afford to pay. Mother M. Delphina, president; Mother M. Bernadina, vice-president; Sister M. Clara, secretary; Mother M. D  minica, treasurer of board of trustees; Dr. Hamilton S. Quinn, chief of the medical staff; Dr. J. H. Glass, surgeon in charge; Dr. D. C. Dye, house physician. Apply to Mother M. Dominica, superior, or to the sister in charge at the hospital, either by letter or in person, at any time.

Utica City Hospital. Incorporated. Given by the resolution of the common council to the Board of Charities, when not found suitable for a work-house, for which purpose it was

UTICA — (Continued).

built. Opened in 1873. Corner of Mohawk and South streets.—For the care of the sick poor of Utica only, who must apply for admission at the office of the Board of Charities under whose control is the hospital. Capacity for thirty-five to forty. Average number of inmates, twenty-four. Last year 371 patients were cared for. Supported by the city. Joseph Faass, John V. Evans, Edmund Richard, Joseph Joerissen, Edward Curran and John Quinn, Commissioners of Charities. Apply at the City Hall at any time.

WATERTOWN — JEFFERSON COUNTY.—House of the Good Samaritan.—A hospital for aged men and women of Jefferson county, under the care of the Protestant Episcopal Church. Average received and cared for annually, about forty-two. Apply to Rev. R. A. Olin, 15 Sterling street. No information has been received.

WESTCHESTER — WESTCHESTER COUNTY.—Westchester Free Hospital. Incorporated November 23, 1892, under the general statute.—For the establishing, maintaining and conducting a hospital for the care and treatment of the sick, maimed, wounded and injured and for all the usual purposes of a hospital. Controlled by a board of five trustees, viz.: M. R. Crow, Joseph B. Bissell, Wm. H. Ballow, W. C. Denning, Rev. F. M. Clendenin, to whom apply.

YONKERS — WESTCHESTER COUNTY.—St. John's Riverside Hospital. Incorporated May 27, 1870, under the general statute. Opened June 6, 1870. No. 60 Woodworth avenue.—To maintain and support a hospital for the care and treatment of sick and disabled indigent patients, without distinction, except those afflicted with contagious diseases. Capacity for twenty-two. Average number of patients cared for daily in the hospital, seventeen; in the dispensary, fifteen. Controlled by a board of managers. Supported by contributions, endowment fund, pay of patients, etc. Wm. F. Cochran, president; Norton P. Otis, vice-president; Charles L.

YONKERS — (Continued).

Gozzens, secretary; Lyman Cobb, Jr., treasurer. Apply to the house physician in charge at the hospital or during dispensary hours.

St. Joseph's Hospital, Yonkers, N. Y. Incorporated March 3, 1888, under the general statute. Opened March 19, 1890. South Broadway, corner of Vark street.—To keep and maintain a hospital for the aid and support of indigent sick, irrespective of race, creed or color, except those who are afflicted with contagious diseases. Capacity, seventy-six beds. One hundred and forty free patients were cared for in the hospital and 200 in the dispensary connected therewith last year. Controlled by a board of managers of the Sisters of Charity. Supported by donations, subscriptions and income from pay patients. Margaret Wightman, president; Mary C. Dodge, secretary, Mt. St. Vincent-on-the-Hudson; Ellen Mitchell (Sister Mary Gertrude), treasurer, and sister in charge, to whom apply, or to the house physician, in person or through a friend, at the hospital daily from 9 a. m. to 6 p. m.

DIVISION 2.—SPECIAL HOSPITALS, INCLUDING HOMES FOR CONVALESCENTS, INCURABLES AND CHRONIC PATIENTS. (Many of the General Hospitals have also Special Departments.)

ALBANY — ALBANY COUNTY.—Albany Charitable Eye and Ear Infirmary of St. Peter's Hospital of the City of Albany. Broadway, corner of North Ferry street. (See class VII, division 1.)

Albany Hospital for Incurables. Incorporated November 14, 1884, under the general statute. Opened in 1884. No. 390 Madison avenue.—To provide medical and surgical care with other necessities for homeless, indigent incurables, without means of support, and who are ineligible, on account of their disease (cancer, paralysis, etc.), for admission to the general hospitals. Capacity for forty-five. Average number cared

ALBANY — (Continued).

for monthly, thirty-five, and 100 during the year. Controlled by a board of trustees and a women's board. Supported by charitable contributions and by an appropriation from the city. W. H. Murray, M. D., president, Lark street; Charles N. Phelps, secretary, office of "Evening Times;" Robert Geer, treasurer, 108 Pier; John W. McNamara, and John H. Farrell, trustees; Mrs. Eleanor Spensley, president of ladies' board, 390 Madison avenue; Mrs. S. D. Van Natta, vice-president of ladies' board, 81 Elm street. Apply for admission to any officer, or to the overseer of the poor.

Open Door Mission (Home for Incurables). Incorporated April 14, 1882. Opened April, 1883. No. 3 Columbia place.—To give a temporal or permanent home to convalescent, incurable and homeless women of good character and reputation, who will conform to the rules of the institution. Capacity for eighteen. Average number of inmates, sixteen. Last year, eighteen persons were cared for. Controlled by a board of managers. Supported by private and public contributions. Miss J. A. Lansing, president, 140 Washington avenue; Miss A. W. Dix, secretary, 206 Jay street; Miss E. A. Dempsey, treasurer, 26 South Hawk street. Apply in person or by letter to the president or treasurer.

St. Peter's Hospital of the City of Albany. Broadway, corner of North Ferry street. (See class VII, division 1.)

BATH — STEUBEN COUNTY.—New York State Soldiers and Sailors' Home. (See class II, division 1.)

BROOKLYN — KINGS COUNTY.—Brooklyn Eye and Ear Hospital. Incorporated May 4, 1868, under the general statute. Opened April, 1868. No. 94 Livingston street.—For the gratuitous treatment of indigent persons suffering from diseases of the eye and ear, regardless of race or creed. Capacity, twenty beds. Average number occupied, fifteen. Has also a Dispensary for outpatients, open daily, except Sundays, at 2 p. m. Controlled by a board of directors. Supported by voluntary contributions. C. D. Wood, president, 880 St.

BROOKLYN — (Continued).

Mark's avenue; Thomas E. Stillman, vice-president; F. H. Cotton, M. D., secretary, 136 Montague street; A. D. Wheelock, treasurer, 161 Joralemon street; Charles Meyer, superintendent, 94 Livingston street, to whom apply daily at 2 p. m., at the hospital.

Brooklyn Home for Consumptives. Incorporated October 11, 1881, under the general statute. Opened June, 1881. Kingston avenue, between Douglass and Butler streets.—To furnish a comfortable home for invalids, especially consumptives, for the very sick poor afflicted with consumption and allied diseases, who have no home, friends or means to support them, and who without such assistance would probably be sent to the alms-house. Unsectarian. Capacity for and average number of inmates, seventy. Controlled by a board of trustees and a board of managers. Supported by voluntary contributions and \$4,000 received from the State. Mrs. S. V. White, president, 210 Columbia heights; Mrs. J. S. Plummer, vice-president, 1276 Pacific street; Mrs. Benjamin Estes, secretary, 119 St. Mark's avenue; Mrs. Benjamin Edson, treasurer, 83 St. Mark's avenue. Apply in person or through a friend at any time to Miss Sophia S. Boggs, 178 Clinton street.

Brooklyn Throat Hospital. Incorporated April 26, 1889, under the general statute. Organized October 23, 1889. Bedford avenue, corner South Third street.—To furnish medical and surgical treatment, care and attendance and service for the care of diseases of the throat, nose, ear, eye and pulmonary organs. Unsectarian. Capacity, twelve beds. Maintains also a Dispensary. Controlled by a board of twenty-three directors and trustees. B. G. Latimer, president; H. A. Powell, secretary. (No answer was received.)

Chinese Hospital Association. No. 45 Hicks street. (See class VII, division 1.)

Faith Home for Incurables. Incorporated in November, 1878, under the general statute. Opened in January, 1875. No. 296 Park place, corner Classon avenue.—For the care of

BROOKLYN — (Continued).

homeless, destitute, incurable women, except those afflicted with cancer or consumption, who are without means or friends to support them. Capacity for and average number of inmates, and number cared for last year, fifty. Controlled by a board of trustees, and an advisory board. Supported by voluntary contributions. C. D. Wood, president, 880 St. Marks avenue; S. B. Childs, M. D., secretary, 498 Classon avenue; James M. Haw, treasurer, 278 St. James place; Miss A. H. Campbell, manager, to whom apply at the home.

House of St. Giles the Cripple. No. 193 State street. (See class VII, division 4.)

Italian Maritime Hospital. Incorporated ————. Opened March 16, 1890. Capacity, fourteen rooms. (Copied from a directory, as no answer has been received.)

Kings County Hospital of Department of Charities and Correction, Smallpox Pavilion. Flatbush. (See class II, division 2.)

Long Island College Hospital of the City of Brooklyn. Henry street, near Pacific. (See class VII, division 1.)

Long Island Throat and Lung Hospital and People's Dispensary. No. 1043 Gates avenue. Incorporated, but as yet the dispensary only is in active operation. (See class VII, division 7.)

St. Martha's Sanitarium and Dispensary. Incorporated June 26, 1889, under the general statute. Nos. 1301 and 1303 Dean street, corner of Kingston avenue. Under the auspices of the Protestant Episcopal Church.—To establish and maintain in the city of Brooklyn a house affording all the facilities for the most approved treatment and nursing, especially for chronic diseases; containing private rooms, where any physician in good standing, without regard to "pathy," can treat his own patients.—For the care of chronic and incurable patients, both men and women, self-supporting and otherwise, without regard to creed, nationality or age above childhood; but no contagious, consumptive and dementia cases are received. Capacity for thirty. Four beneficiaries received 406 days of care and treatment last year. Con-

BROOKLYN — (Continued).

trolled by a board of trustees. Supported by board of patients and by voluntary contributions. Miss Thomasine M. Kearny, president, 113 McDonough street; Wm. G. Webb, vice-president, 52 South Sixth street; Mrs. Anna Dickinson, secretary, 828 Lafayette avenue; L. V. B. Cameron, treasurer, 30S St. James place. Apply to the president.

United States Naval Hospital. Flushing avenue, opposite Ryerson street. (See class II, division 3.)

BUFFALO — ERIE COUNTY.—Buffalo Eye and Ear Infirmary.

Incorporated February 26, 1876, under the general statute. No. 673 Michigan street, near Genesee. An act was passed May 7, chapter 217, Laws of 1878, empowering the board of supervisors of Erie county to make the annual appropriations for the relief of the Infirmary.—For the medical and surgical treatment of diseases of the eye, ear, nose and throat, both at the Infirmary in the General Hospital and at their own homes. The poor are cared for gratuitously daily, except Sundays, at 2 p. m. Fifteen hundred and forty-eight received treatment last year. Controlled by a board of trustees and the medical staff. Supported by county appropriations, voluntary contributions and patients' fees. C. C. Wyckoff, M. D., president. Apply at the Infirmary.

Buffalo Ophthalmic Hospital. Incorporated January 6, 1893, under the general statute. Opened in June, 1892. No. 47 West Huron street. Formerly the "Buffalo City Eye and Ear Dispensary."—To erect, establish, maintain and operate a hospital for the reception, care, maintenance and giving of medical and surgical advice, aid and treatment to worthy and self-respecting poor persons afflicted with diseases of the eye, ear, nose and throat. Particular for patients who can pay a small fee, but who are unable to pay the usual charges of specialists. Capacity, fifteen beds. Controlled by a board of trustees and managers. Supported by voluntary donations, fees, and by hospital charges for patients able to pay. W. H. Gratwick, T. G. Smith, W. T. Warren, P. H.

BUFFALO — (Continued).

Griffin, N. Morey, J. W. Robinson, W. A. Rogers, J. J. McWilliams and F. Park Lewis, trustees. Apply at the hospital during office hours.

Buffalo Quarantine Hospital. No. 762 Ferry street.—A city hospital for smallpox patients, but no use has been made of it for thirty or forty years. (Signed by Ernest Wende, M. D., for city of Buffalo.)

Charity Eye, Ear and Throat Hospital of Erie County. Incorporated December 3, 1891, under the general statute. Opened as above institution December, 1891, by the union of the "Erie County Eye, Ear and Throat Infirmary" and the "Samaritan Eye and Ear Infirmary." Corner of Main and East Huron streets.—For the gratuitous treatment of indigent persons suffering from diseases, injuries or imperfections of the eye, ear and throat. Strictly for those unable to pay physicians' fees. Controlled by a board of managers. Supported by voluntary contributions, and by an appropriation from the board of supervisors. Wm. K. Allen, president, 791 West Ferry street; Alvin A. Hubbell, M. D., vice-president, 212 Franklin street; Frank W. Abbott, M. D., secretary, 223 Franklin street; A. B. Kellogg, treasurer, 21 North Pearl street. Apply in person at the hospital daily, except Sunday, from 2 to 3 p. m.

Children's Hospital of Buffalo. No. 219 Bryant street. (See class VII, division 4.)

"Erie County Eye, Ear and Throat Infirmary" has united with the "Samaritan Eye and Ear Infirmary" to form "The Charity Eye, Ear and Throat Hospital of Erie County," corner of Main and Huron streets, which see above.

Good Samaritan Eye and Ear Infirmary, formerly of 203 Elliott street, has now united with the Erie County Eye, Ear and Throat Infirmary, to form "The Charity Eye, Ear and Throat Hospital of Erie County," corner of Main and Huron streets, which see above.

United States Marine Hospital Service. P. O. Building. (See class II, division 3.)

NEW YORK CITY.—Adult Hospital of the Department of Public Charities and Correction. (Randall's island.) (See class VII, division 1.)

All Saints' Convalescent Home for Men and Boys and the De Peyster Convalescent Home for Men and Boys of the "Order of Brothers of Nazareth," which see under Verplank, Dutchess county, in this division.

American Veterinary College (Hospital Department). Incorporated and organized under the general statute in 1875; reorganized and reincorporated by special act June 2, 1888; see chapter 453, Laws of 1888; amendatory acts chapter 586, Laws of 1886; and chapter 355, Laws of 1887. Nos. 139 and 141 West Fifty-fourth street.—To help poor people in the treatment of their sick or lame horses. Five hundred and twenty-three animals treated, and 223 operations performed last year. F. D. Weisse, M. D., president; W. J. Coates, V. M. D., secretary, and assistant surgeon; Geo. B. Satterlee, treasurer; A. T. Liautard, M. D., V. M., chief surgeon, 62 West Eighty-fifth street. Apply at the hospital every Wednesday and Saturday, at 2.30 p. m.

Children's Hospital, Department of Public Charities and Correction. (Randall's island.) (See class VII, division 4.)

Chinese Hospital Association. (See under Brooklyn Hospitals, class VII, division 1.)

Christopher Columbus Italian Hospital. No. 41 East Twelfth street. (See class VII, division 1.)

Colored Home and Hospital. First avenue and Sixty-fifth street. (See class V, division 3.)

Columbian Institute for the Preservation of Health and the Cure of Chronic Diseases. Incorporated in 1882 under the general statute. No. 142 East Thirty-fourth street.—To provide special treatment for chronic diseases with a view to their cure and relief. Unsectarian and cosmopolitan. Patients who are unable to pay are received free as far as means will permit. Controlled by a board of managers. Supported by voluntary donations and by pay patients. C. Robinson Griggs, president; Samuel Tebbutt, secretary and

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treasurer; Henry A. Hartt, M. D., medical director, to whom apply at any hour. Note.—This Institution has, since the compilation of the directory, suspended active operations and at present is closed for public patients.

Epileptic Hospital, of the Department of Public Charities and Correction (Randall's island); a department of the City Hospital for adult epileptics, male and female. Apply to William Blake, superintendent outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

Flower Surgical Hospital of the New York Homoeopathic Medical College and Hospital. Eastern Boulevard (Avenue A), and Sixty-third street, which see in this division.

Home for Incurables. Incorporated in 1886, under the general statute. Opened in 1886. Third avenue, corner of East One Hundred and Eighty-second street, Fordham.—For the care and maintenance of the incurably sick of the better class (except cases of lunacy and inebriates), irrespective of religious belief; such chronic cases as are not admitted to the general hospitals. Consumptives are received, and a ward for cancer cases has been opened. Unsectarian. Capacity for 180. Average number of inmates, 175. One-third of the beds are free. Ordinary charge, seven dollars per week. Controlled by a board of managers. Supported by voluntary contributions, interest on investments and board of patients. Benjamin H. Field, president, 21 East Twenty-sixth street; Henry M. McLaren, secretary, 128 East Seventy-eighth street; George Sherman, treasurer, 54 Wall street; Israel C. Jones, M. D., superintendent and resident physician, to whom apply, by letter or in person, at the home, as above.

Hospital for Animals of the New York College of Veterinary Surgeons. Incorporated in 1857. No. 332 East Twenty-seventh street.—For the free treatment of domestic animals of the poor. Wm. T. White, M. D., president; C. E. Billington, secretary, 106 Madison avenue; John M. Guiteau, treasurer. Apply to the surgeon in charge at the hospital.

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Hospital for Incurables, of the Department of Public Charities and Correction; a department of the Alms-house (Blackwell's island).— Receives indigent adult males and females suffering from incurable diseases. Capacity, 108 beds. Apply to William Blake, superintendent outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

House of Rest for Consumptives. Incorporated by special act, September 24, 1869. Amended May 11, 1891, under chapter 425, Laws of 1890, by consent of Abraham R. Lawrence, Justice of the Supreme Court. The institution was opened November 1, 1869, at Tremont, and patients were received until June 1, 1891, when the active work was transferred by agreement to St. Luke's Hospital, Fifth avenue and Fifty-fourth street, but the corporation remains in full force.— For the establishing, founding, carrying on and managing a hospital and home for consumptives and persons afflicted with other bronchial and pulmonary complaints, and of securing from other hospitals, by the endowment of beds and otherwise, medical attendance and treatment for consumptives and persons afflicted with other bronchial and pulmonary complaints, with suitable provisions for the care and comfort of such consumptives and such persons. Contagious cases, combined with pulmonary or bronchial troubles, are not received. Present capacity and average number in the consumptive wards at St. Luke's Hospital, forty-nine. Last year there were 104 beneficiaries. Controlled by a board of trustees. Supported by small endowment and voluntary contributions. Rev. T. M. Peters, D. D., president, 225 West Ninety-ninth street; Woodbury G. Langdon, vice-president, 719 Fifth avenue; Wm. Harold Brown, secretary, 127 West Forty-third street; E. L. Tiemann, treasurer, Manhattan and One Hundred and Twenty-ninth streets. Apply to the superintendent at St. Luke's Hospital, Fifth avenue and Fifty-fourth street, at any time.

House of St. Giles the Cripple. No. 193 State street, Brooklyn. Receives crippled children from New York. (See under Brooklyn's Hospitals, class VII, division 4.)

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House of the Holy Comforter, Free Church Home for Incurables.

Incorporated in 1880, under the general statute. Opened in 1881. 149 Second avenue.—A free hospital and home for the care of Protestant women and children of the better class, suffering from incurable diseases, who are without means or friends, able to support them, and who cannot, on account of their sickness, gain access into other homes or hospitals. All patients come on trial for three months. Capacity for thirty-five to forty. Average number of inmates, thirty-one. Controlled by a board of trustees. Supported by voluntary contributions, collections, etc. Under charge of the Sisters of the Visitation of the Blessed Virgin Mary. Rev. M. Van Rensselaer, D. D., president and house chaplain, St. Nicholas place and West One Hundred and Fifty-first street; Stanley W. Dexter, secretary, ———; Beverly Chew, treasurer, Metropolitan Trust Company, 39 Wall street; G. W. Talson, M. D., house physician. Apply to the sister in charge at any time.

Isabella Heimath. Amsterdam avenue and One Hundred and Ninetieth street. (See class V, division 3.)

Lebanon Hospital Association. Westchester avenue. (See class VII, division 1.)

Lutheran Hospital Association of the City of New York and Vicinity. Incorporated July 9, 1881, under the general statute. Opened October 31, 1881. East New York avenue, between Powell and Junius streets, twenty-sixth ward, Brooklyn, Kings county.—For the purpose of nursing the worthy sick and the wounded, the aged and infirm, members of the congregations of the various Lutheran churches of New York and vicinity, except such as shall suffer from infectious diseases, and of providing for them proper medical and surgical care. Receives invalids from New York city, who are not admitted by the general hospitals, such as consumptives, police cases, etc. Capacity for seventy-five. Average number of patients, about fifty a month. One hundred and thirty-four free patients were cared for last year, who received

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17,530 days of hospital treatment. Board, seven dollars per week in the wards to those able to pay; otherwise free. Controlled by a board of trustees and a visiting committee. Supported by public funds, pay patients, donations and contributions from the members of the Lutheran congregations of New York and vicinity. Edw. Hauselt, president, 178 William street, New York city; W. C. Farr, vice-president, Bayonne, N. J.; Wm. Dick, treasurer, 156 South Ninth street; Brooklyn; Rev. E. Bohm, secretary, 341 East Eighteenth street, to whom apply for admission, or to any member of the board.

Manhattan Eye and Ear Hospital. Incorporated by special act, May fifth, chapter 584, Laws of 1869. Amendatory act passed May twenty-third, chapter 349, Laws of 1884. Opened in October, 1869. No. 103 Park avenue, corner of Forty-first street.—For the free treatment of indigent persons only, suffering from diseases of the eye, ear, throat and nervous diseases, who are too poor to pay for medical advice. Capacity for fifty beds. Average number of inmates, thirty-seven. Patients who are able are expected to pay moderate board; otherwise free. No private patients received. During 1891, 684 indoor patients were cared for and received 13,271 days' board. The Dispensary is open daily, except Sundays, at 2 p. m. A small charge is made for prescriptions to those able to pay. Thirteen thousand one hundred and fifty-six dispensary patients were treated, who made 60,830 visits during the year. Controlled by a board of directors. Supported by voluntary contributions, board of patients able to pay and interest on investments (endowment). John Sinclair, president, 1 Broadway; Auguste Richard and Logan C. Murray, vice-presidents; A. G. Agnew, secretary, 23 West Thirty-ninth street; Charles Lanier, treasurer, 17 Nassau street. For admission to the hospital apply to L. D. Holly, superintendent, or to the house surgeon at the hospital.

Metropolitan Throat Hospital. Incorporated January 3, 1874, under the general statute. No. 351 West Thirty-fourth

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street.—For the establishment and maintenance of a hospital in the city of New York, for the professional care and treatment of persons afflicted with diseases of the throat. Furnishes gratuitous treatment to the deserving poor, and to those who are unable to pay special fees or suffering with diseases of the nose and throat. No contagious cases received. Unsectarian. Capacity of hospital, twelve beds. Has also a Dispensary for outdoor patients open daily from 2 to 4 p. m. Six thousand four hundred and ninety-eight patients cared for last year. Controlled by a board of trustees. Supported by voluntary contributions. T. K. Gibbs, president, 62 West Twenty-first street; E. F. Winslow, vice-president, Union League Club; Jos. H. Chapman, treasurer, 246 West Forty-second street; Clinton Wagner, M. D., secretary, and medical superintendent, to whom apply at the hospital from 2 to 4 p. m., or by letter to any of the officers.

Montefiore Home for Chronic Invalids. Incorporated 1884, under the general statute. Opened in 1884. West Boulevard, between One Hundred and Thirty-eighth and One Hundred and Thirty-ninth streets.—To afford medical treatment, food and shelter to those unfortunates, who by reason of the incurability of their diseases, are refused admission in hospitals and asylums. Receives all incurables, irrespective of creed, nationality or color. Capacity for and average number of inmates, 160. Three hundred and four beneficiaries last year. Patients are also sent to Vineland, N. J., and to Colorado, through the medium of the "Discharged Patients and Climatic Cure Funds," when a change of air is deemed beneficial. The families, of those in the home, or of those otherwise under treatment, if they are deprived of the labor of the bread-winner of the family, are supported from the "Julius Hallgarten-Fund," the interest of which is devoted to that purpose. Controlled by a board of twenty directors. Supported by subscriptions of patrons and members, and by voluntary donations. Jacob H. Schiff, president 932 Fifth avenue; L. Gano, vice-president, 134 East Seventy-second

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street; Julius J. Lyons, honorary secretary, 61 East Fifty-third street; Isador Strauss, treasurer, One Hundred and Fifth street and Boulevard. Apply to the superintendent at the home or by letter to any of the officers.

New Amsterdam Eye and Ear Hospital. No. 212 West Thirty-eighth street. (See class VII, division 7.)

New York Cancer Hospital. Incorporated by special act, chapter 429, Laws of 1884. Opened December 6, 1887. Eighth avenue and Central park, between One Hundred and Fifth and One Hundred and Sixth streets.—To establish, maintain and conduct a cancer hospital. For the treatment of all sufferers from cancer whose condition admits of cure or relief, on approval of one of the medical officers, at a charge of seven dollars a week in the wards and from fifteen dollars to twenty dollars in private rooms. Those unable to pay are treated gratuitously. None are refused admission, however, hopeless their condition. Capacity for 100; fifty to seventy females, and twenty to thirty-five male patients. Average number of inmates, forty. Over 376 beneficiaries last year. Patients too ill to present themselves for application will, on proper request, be visited by a medical officer at their home. Apply for admission in person daily except Sunday, from 10 a. m. to 4 p. m., or by letter accompanied by certificate from some responsible physician. Controlled by a board of managers. Supported by income of investments, in small part payment from patients, endowments and voluntary contributions. John E. Parsons, president, 111 Broadway; Henry C. Coe, M. D., secretary, 27 East Sixty-fourth street; George C. Clark, treasurer, 49 Wall street. Apply to the hospital.

New York Eye and Ear Infirmary. Incorporated by special act, March 29, 1822, as "The New York Eye Infirmary." Amending act passed April thirtieth, chapter 460, Laws of 1864, changing the name to present title; further amendment passed May ninth, chapter 389, Laws of 1874. Northeast corner of Second avenue and Thirteenth street.—For the free treat-

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ment and care of indigent persons suffering from diseases of the eye, ear and throat. In-patients are admitted to the hospital, attached to the infirmary, on recommendation of a surgeon, and are charged board unless satisfactorily certified as unable to pay. Its capacity is seventy-six beds, to which more than one-half of the patients are usually admitted free of charge. The Infirmary is open daily, except Sundays and legal holidays, from 12.30 to 3 p. m. for free treatment of the indigent poor, afflicted with diseases of the eye, ear and throat, but a charge of ten cents is made for medicines to those who are able to pay. Over 18,000 new patients received in the hospital and infirmary during last year, and a total of over 58,000 cared for. The infirmary also maintains a School of Instruction for diseases of the eye, ear and throat. Controlled by a board of directors. Supported by voluntary contributions and interest from permanent fund. Benj. H. Field, president, 21 East Twenty-sixth street; Rt. Rev. H. C. Potter, D. D., and J. Hasson Rhoades, vice-presidents; Gorham Bacon, M. D., secretary, 63 West Fifty-fourth street; John L. Riker, treasurer, 64 Cedar street; John T. Allan, superintendent, to whom apply during office hours at the infirmary.

New York Home for Convalescents. Incorporated May 3, 1880, under the general statute. No. 433 East One Hundred and Eighteenth street.—To afford temporary shelter and care, with assistance in obtaining employment, for worthy Protestant poor (women and girls), who may be discharged as convalescents from the hospital, or are otherwise properly recommended. Capacity for twenty. Average number of inmates, twelve. Seventy-three beneficiaries last year. Controlled by a board of twenty-one managers. Supported by donations and subscriptions. Mrs. Dr. W. C. Palmer, president, 316 East Fifteenth street; Mrs. James Wood, first vice-president, 14 Mt. Morris avenue; Mrs. M. P. Buchanan, second vice-president, 355 West Thirtieth street; Mrs. Arthur E. Fish, third vice-president, 200 West Fifty-second street; Mrs.

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Sarah K. Bourne, recording secretary, 316 East Fifteenth street; Miss H. D. Nelson, corresponding secretary, 35 East Twenty-ninth street; Mrs. Bradford Rhodes, treasurer, 78 William street; Miss F. Pilgrim, matron, to whom apply with a certificate signed by a physician, certifying the applicant is a convalescent.

New York Homeopathic Medical College and Hospital. Incorporated in 1860 under the general statute. Amendatory act passed in 1888. Eastern Boulevard (Avenue A), between Sixty-third and Sixty-fourth streets.—Maintains the "Flower Surgical Hospital," opened in January, 1890, for the gratuitous treatment of surgical cases exclusively among the poor. Capacity, thirty beds. Over 103 patients were cared for, and over 200 operations performed on patients not retained in the hospital during the year. The Dispensary, opened in 1889 in the college building, provides free medical care and medicines to the sick poor. Averages 130 patients daily; over 25,000 prescriptions were dispensed last year. Open daily, except Sundays and holidays, from 10 a. m. to 4 p. m. Controlled by the board of trustees, executive committee of the college faculty and the Ladies' Guild. Supported by voluntary contributions. Rufus B. Cowing, president, 138 East Seventy-fifth street; George W. Clarke, secretary, 352 West One Hundred and Twenty-third street; Roswell P. Flower, treasurer of board of trustees; W. T. Helmuth, M. D., superintendent of the hospital, 299 Madison avenue, to whom apply or to the resident surgeon at the hospital.

New York Ophthalmic and Aural Institute. Incorporated July 2, 1873, under the general statute. Opened May, 1869. No. 46 East Twelfth street.—To establish, conduct and manage an institution with the following departments, to wit: A Dispensary and a Hospital for the treatment of diseases of the eye and ear, and a School of Ophthalmology and Otology, the benefits of which institution shall be given gratuitously to patients unable to pay therefor, and to other patients for compensation, but all moneys so received shall be applied to

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the support of the institution. Dispensary patients shall, in all cases, be treated gratuitously, the physician in charge refusing treatment to those able to pay a fee for such medical care and advice. Capacity of hospital, thirty beds. Average number of inmates, eighteen. Last year 144 beneficiaries were received in the hospital; 8,519 new patients in both departments, 358 of whom were inmates. Controlled by a board of trustees. Supported by the board of pay-patients and by voluntary contributions. Wm. A. Wheelock, president, 320 Broadway; Wm. H. Draper, M. D., first vice-president, 19 East Forty-seventh street; Philip Bissinger, second vice-president, 22 John street; Gustav H. Schwab, secretary, 2 Bowling Green; Wm. Salmon, treasurer, 11 Broad street. Apply to the surgeon in charge daily at the institute from 2 to 3 p. m.

New York Ophthalmic Hospital. Incorporated April 22, 1852, under the general statute. Amendatory acts passed: Chapters 341 and 525, Laws of 1868, and chapter 180, Laws of 1883. Opened May, 1852.—Third avenue, northeast corner of Twenty-third street.—For the gratuitous homeopathic treatment of needy worthy persons, who are unable to pay for medical care, afflicted with diseases of the eye, ear and throat. Capacity, fifty beds. Unusual charge to those able to pay board, five dollars per week and upwards. Last year 401 house patients were treated and given 8,245 days' board. The Dispensary or outpatient department is for free treatment of the poor, and is open daily, except Sundays, from 2 to 4 p. m. Over 13,000 patients were cared for, and 53,740 prescriptions dispensed last year. There is a college department for instruction in the diseases of the eye, ear and throat. Controlled by a board of directors. Supported by voluntary contributions, board of patients, fees for medicines, etc. Thos. C. Smith, president, 300 Eckford street, Greenpoint, L. I.; E. C. Clark, vice-president, 352 West One Hundred and Twenty-third street; R. C. Root, secretary,

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Tarrytown, N. Y.; E. C. Benedict, treasurer, 29 Broad street. Apply for admission to the physician in charge at the hospital daily, except Sundays and holidays, at 2 p. m.

New York Orthopedic Dispensary (and Hospital). Incorporated by special act May 1, 1868, chapter 526, Laws of 1868. Amendatory acts: Chapter 218, Laws of 1881, and chapter 387, Laws of 1887. Nos. 126 and 128 East Fifty-ninth street.— To afford surgical and mechanical treatment for physical deformities to the poor only, and to give instruction in such treatment. If, after investigation, the applicants are found needy and promise co-operation, the necessary apparatus is supplied. Those patients requiring surgical treatment only are not admitted to the hospital, which has capacity for sixty children suffering from hip and spinal diseases and other deformities. Average number of inmates, forty. Last year 2,030 patients were treated in the Dispensary and eighty-one in the Hospital. Controlled by a board of trustees. Supported by voluntary contributions. O. Edgerton Schmidt, president, 19 West Ninety-third street; F. H. Weeks, vice-president, 120 Broadway; Temple Prime, secretary, 26 Broad street; James K. Gracie, treasurer, 80 Broadway. Apply to the house surgeon, daily, from 1 to 3 p. m.

New York Polyclinic. Nos. 214 and 216 East Thirty-fourth street. (See class VII, division 1.)

New York Post-graduate Medical School and Hospital (and Babies' Wards). No. 226 East Twentieth street. (See class VII, division 1.)

New York Skin and Cancer Hospital. Incorporated November 11, 1882. Opened January, 1883. No. 243 East Thirty-fourth street. Country Branch Hospital for chronic cases. Fordham Heights.— For the establishment of a hospital in the city and county of New York, for the treatment of indigent persons, suffering from disease of the skin, or cancer, and is open to all who are unable to pay for medical attendance. While intended principally for the poor of this city, patients from all localities are admitted to its privileges; the physicians may reject any

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applicants whose circumstances may indicate they are able to pay for adequate advice outside. A nominal charge of seven dollars per week, payable in advance is made, but worthy patients unable to pay the whole or part cost, are assisted by the Ladies' Charity Committee. Private patients are received at rate proportionate to the accommodations given. Acute contagious cases are not admitted. Capacity of hospital, eighty-five beds. Average number of patients including the branch hospital, eighty. Dispensary attached to the hospital is open daily, except Sunday, from 2 to 4 p. m., for outdoor worthy poor. One thousand eight hundred and seventy-three patients were treated and 21,251 hospital days furnished last year, nearly three-fourths of which were free. Controlled by a board of governors. Supported by voluntary contributions. John D. Archbold, president, 26 Broadway; Washington Wilson, vice-president, 33 East Seventeenth street; Frederick Hass, secretary, 60 East Twenty-first street; Edward Winslow, Treasurer, 17 Nassau street. Apply to the physician-in-charge or to the matron at the city Hospital, 243 East Thirty-fourth street, daily, except Sundays from 2 to 4 p. m.

New York Society for the Ruptured and Crippled. Incorporated March 27, 1863, under the general statute. No. 135 East Forty-second street, corner Lexington avenue.—Maintains a Hospital and Outdoor service.—To supply skilfully-constructed surgico-mechanical appliances and for the treatment of in and outdoor patients requiring trusses and spring supports; also bandages, laced stockings, and other suitable apparatus for the relief and cure of cripples, both adults and children, and so far as possible, to make these benefits available to the poorest of the community. Moderate charges are made to those able to pay to cover the cost of apparatus made; otherwise free to the indigent adults, and curable children, from 4 to 14 years of age, are received as in-patients. Contagious and all cases not applicable to those named in title are not received. Capacity for 200 in the hospital. Average number of inmates, 180. Last year, 8,782 new patients and 15,000 old patients were

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treated in both departments. Controlled by a board of twenty managers. Supported by voluntary contributions, receipts from patients and appropriations from the city. Wm. H. Osborn, president; 32 Park avenue. John P. Townsend, recording secretary, 53 East Fifty-fourth street. Frederick R. Sturges, treasurer, 74 Wall street; V. P. Gibney, M. D., surgeon-in-chief, to whom apply for admission as indoor or outdoor patients, daily, except Sundays and legal holidays, at the dispensary from 1 to 4 p. m.

Paralytic Hospital, of the Department of Public Charities and Correction (Blackwell's island); a department of the City Hospital (late "Charity") for adult paralytic cases, both male and female. Apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

Reception Hospital of the Health Department, foot of East Sixteenth street, for temporary care of patients awaiting transfer to Riverside Hospital. (See class II, division 2.)

Riverside Hospital, of the Health Department (North Brothers' Island), opened in 1885, where cases of smallpox and other contagious diseases that can not be safely isolated at home are received and treated; also, all cases of smallpox, typhus and relapsing fevers from quarantine. (See class II, division 2.)

Roosevelt Hospital. Ninth avenue, between Fifty-eighth and Fifty-ninth streets. (See class VII, division 1.)

St. Andrew's Convalescent Hospital of the St. John the Baptist Foundation. Not incorporated separately; a department of the work of the Sisters of St. John Baptist. Opened September, 1886. No. 213 East Seventeenth street.—For women and girl patients over 12 years of age, of good character, needing care, nursing and rest, received from the general hospitals, recovering from operations and who are not strong enough to go to work; also for servants and shop girls suffering from overwork, but not ill enough to be admitted to a regular hospital. It receives promptly and without pay-

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ment all cases approved by the visiting physician without distinction of creed. Epileptic, chronic, mental, nervous, contagious or infectious diseases are not admitted; but patients are eligible in the earlier stages of consumption, if capable of being sufficiently relieved to return to work. Most of the patients are cared for gratuitously. Capacity, fourteen beds. Average number of beneficiaries annually, eighty-five; last year, ninety-one were inmates for two weeks or more. Controlled by the Sisters of St. John Baptist. Supported by voluntary contributions and a small endowment. Walter Vought, M. D., visiting physician; Sisters of St. John Baptist, officers, No. 213 East Seventeenth street. Apply to the Sister in charge by letter, or in person at the hospital, week days from 10 a. m. to 5 p. m.

St. John The Baptist Foundation. Mother House, No. 233 East Seventeenth street. (See class III, division 3.)

St. Joseph's Hospital of the Sisters of the Poor of St. Francis.

A community incorporated by special act, chapter 201, Laws of 1866. The hospital (opened in 1882) is now at East One Hundred and Forty-third and One Hundred and Forty-fourth streets, between Brook and St. Ann's avenues. (Formerly at 328 East One Hundred and Ninth street.)—For consumptives and a limited number of patients, suffering from chronic and incurable diseases who can not be cared for or received in ordinary hospitals. No acute diseases, insane, epileptics, chronic, surgical cases, deformed or aged persons received. Free to the poor, irrespective of creed, color or nationality. Capacity for 250 beds. Controlled by the Sisters. Supported by voluntary contributions. Apply for admission by letter or in person to Sister Coletta, superioress, or to the house physician.

St. Luke's Hospital. Fifth avenue and Fifty-fourth street. (See class VII, division 1.)

St. Mary's Free Hospital for Children. Noyes Memorial Home at Peekskill, for convalescent and chronic patients. (See class VII, division 4.)

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Spuyten Duyvil Parkway. (The) Seton Hospital. Incorporated March 29, 1892, under the general statute. In course of erection.—To erect, establish, maintain and operate a hospital, infirmary or home for the reception, care, maintenance, giving of medical and surgical advice, aid and treatment to persons afflicted with maladies or physical injuries, or physical weaknesses, or deformities, and a home for aged and indigent persons and a free dispensary. More particularly for the purpose of giving treatment to persons in the first stages of consumption, as well as those older cases. Controlled by a board of managers of the Sisters of Charity of St. Vincent de Paul. To be supported by voluntary contributions. Mother M. Rosina, president; Sister M. Irene, treasurer, to whom apply at the New York Foundling Hospital, No. 175 East Sixty-eighth street.

Sheltering Arms. West One Hundred and Twenty-ninth street and Amsterdam avenue.—Cares for crippled and incurable children. (See class V, division 2.)

Sisters of the Poor of St. Francis, St. Joseph's Hospital. East One Hundred and Forty-third and One Hundred and Forty-fourth streets, between Brook and St. Ann's avenues, which see in this division.

United States Marine Hospital Service. Marine Hospital is located at Stapleton, Richmond county, S. I. Office at the Battery. (See class II, division 3.)

Willard Parker Hospital, of the Health Department (1884), foot of East Sixteenth street.—For both children and adults sick with contagious diseases. Intended chiefly for scarlet fever and diphtheria. (See class II, division 2.)

OAK SUMMIT — DUTCHESS COUNTY.—Order of Brothers of Nazareth. (See under Verbank, Dutchess county, in this division.)

PEEKSKILL — WESTCHESTER COUNTY.—Noyes Memorial Home of the St. Mary's Free Hospital for Children in New York, which see in class VII, division 4.

STAPLETON — RICHMOND COUNTY (S. I.).—Marine Hospital of the United States Marine Hospital Service (which see under New York, class II, division 3.)

TARRYTOWN — WESTCHESTER COUNTY.—Tarrytown Hospital Association. (See class VII, division 1.)

TOMPKINSVILLE — RICHMOND COUNTY.—Staten Island Eye and Ear Hospital, Batimore Flats. No information has been received.

VERBANK — DUTCHESS COUNTY.—Order of Brothers of Nazareth. A community of laymen in the Protestant Episcopal Church. Incorporated October 22, 1890, under the general statute. Now at Priory Farm, Verbank, formerly at No. 521 East One Hundred and Twentieth street, New York city.—For the industrial, educational and preventive work among boys, the reformation and restoration of the vicious, and for the care of the poor and suffering. The order maintains the "All Saints' Convalescent Home for Men and Boys," the "De Peyster Home for Consumptive Boys," "St. Andrew's Cottage," a summer home at Farmingdale, L. I., and "Ruhberg," a clerical rest at Ellenville, Ulster county. Controlled by the Order of the Brothers of Nazareth. Supported almost entirely by voluntary contributions. Rt. Rev. H. C. Potter, D. D., visitor; John D. Wing, president, 54 William street, New York city; Rev. D. I. Odell, vice-president, Chelsea, Mass.; Brother Louis, O. B. N., secretary, Verbank; James Pott, treasurer, 14 Astor place, New York city; Brother Gilbert, O. B. N., assistant treasurer, to whom apply at Verbank, Dutchess county.

DIVISION 3.—HOSPITALS FOR THE INSANE. (See also State Relief. See also Asylums and Private Homes for the Insane in Class VI, Divisions 4 and 5.)

BINGHAMTON — BROOME COUNTY.—Binghamton State Hospital. (See class II, division 1.)

BROOKLYN — KINGS COUNTY.—Long Island College Hospital of the City of Brooklyn. Henry street, near Pacific. (See class VII, division 1.)

BUFFALO — ERIE COUNTY.— Buffalo State Hospital. Forest avenue, near Park lake. (See under class II, division 1.)

MATTEAWAN — DUTCHESS COUNTY.— State Asylum for Insane Criminals, formerly at Auburn, Cayuga county. (See class II, division 1.)

MIDDLETOWN — ORANGE COUNTY.— Middletown State Homeopathic Hospital. (See class II, division 1.)

NEWARK — WAYNE COUNTY.— New York State Custodial Asylum for Feeble-minded Women. (See class II, division 1.)

NEW YORK CITY.— Society of the New York Hospital, Bloomingdale Asylum. One Hundred and Seventeenth street, between Amsterdam avenue and the Boulevard. (See class VII, division 1.)

OGDENSBURGH — ST. LAWRENCE COUNTY.— St. Lawrence State Hospital. (See class II, division 1.)

POUGHKEEPSIE — DUTCHESS COUNTY.— Hudson River State Hospital. (See class II, division 1.)

ROCHESTER — MONROE COUNTY.— Rochester State Hospital. South avenue. (See class II, division 1.)

SYRACUSE — ONONDAGA COUNTY.— Syracuse State Institution for Feeble-minded Children. (See class II, division 1.)

TROY — RENSSELAER COUNTY.— Marshall Infirmary (and Rensselaer County Lunatic Asylum). (See class VII, division 1.)

UTICA — ONEIDA COUNTY.— Utica State Hospital. (See class II, division 1.)

WILLARD, SENECA LAKE — SENECA COUNTY.— Willard State Hospital. (See class II, division 1.)

DIVISION 4.—WOMEN'S, CHILDREN'S, AND LYING- IN HOSPITALS AND ASYLUMS.

NOTE.—Under no circumstances should a woman about to be confined with a second illegitimate child be recommended to a private institution. Such should always go to the Island municipal institution, as the institutions in the city are only for persons who can by reformed

Whenever a woman is willing to keep and care for her child, she should be encouraged to do so and a great effort made to find for her a place where she can work with it, for her board only if nothing better can be found. ("New York Charities' Directory.")

ALBANY — ALBANY COUNTY.—Albany Charitable Eye and Ear Infirmary of St. Peter's Hospital, of the City of Albany. Broadway, corner of North Ferry street. (See class VII, division 1.)

Child's Hospital of the Corning Foundation for Christian Work in the Diocese of Albany. Not separately incorporated. Opened in March, 1875. Elk street, corner Hawk.—To provide medical and surgical treatment and care to sick children furnished with a physician's certificate and recommendation. No contagious cases are admitted. Capacity for 100. Average number of inmates, sixty-five. One hundred and fifty beneficiaries and 173 patients were treated last year. Controlled by the Rt. Rev. Wm. C. Doane, S. T. D., and the Sisters of the Holy Child Jesus. Supported by churches and by voluntary contributions, and an appropriation from the cities, towns and counties. Edward Bowditch, treasurer. Apply to the attending surgeon or physician or to the sister in charge.

Open Door Mission (Home for Incurables). No. 3 Columbia place. (See class VII, division 2.)

BROOKLYN — KINGS COUNTY.—Brooklyn Homeopathic Hospital. No. 105 Cumberland street. (See class VII, division 1.)
Brooklyn Homeopathic Maternity. Incorporated February 25, 1871, under the general statute as the "Brooklyn Homeopathic Lying-in Asylum." Charters were also obtained for the "Nursery, Women's and Children's Hospital," and the "New York State School for Training Nurses," and to combine the four, the title was changed to "The Brooklyn Homeopathic Maternity, in 1873. Opened March, 1871. Nos. 44, 46 and 48 Concord street.—To furnish exclusively homeopathic treat-

BROOKLYN — (Continued).

ment and comfortable accommodations for women desiring an asylum during confinement; for children during infancy, and also general hospital treatment for women and children; also to qualify nurses for the intelligent care of the sick. "To aid the friendless; to save the fallen; to lovingly care for the little ones left floating on life's tide, subject to all its tossings and adverse currents; to train women, brave and strong, tender and true, to go into our homes and minister at our bedsides with intelligent care and thoughtfulness — this is the work and aim of the 'Maternity.'" Unmarried women who have previously had a child are not admitted. Capacity for seventy-five. Average number of inmates, sixty-five. Last year, 118 women and 125 children were cared for, and eighty-seven nurses graduated from the school. Controlled by a board of lady managers, with an advisory board of gentlemen and a medical staff. Supported by appropriations from the State and city, by patients' and infants' board, and by voluntary contributions and collections. Mrs. M. M. Voorhies, first directress, 104 Montague street; Mrs. George W. Gilbert, second directress, 149 Sixth avenue; Mrs. N. H. Carey, third directress, 149 Amity street; Mrs. Sidney Starbuck, secretary, 44 Gates avenue; Mrs. Tobias New, assistant secretary and chairman of training school committee, 50 Gates avenue; Mrs. Robert Shaw, treasurer, 298 Carlton avenue; Edward W. Avery, M. D., medical director, 16 Hancock street. Apply to the secretary, to any manager or to the resident physician, at the institution.

Brooklyn Nursery and Infants' Hospital. Incorporated — — —
Opened August, 1871. No. 396 Herkimer street. — To shelter and care for children under 3 or 4 years of age, who are motherless; and to receive mothers who will nurse their own and other babies. A small fee for board is charged when the parent can afford it. Capacity for 100. Average number of inmates, ninety. Last year 330 were cared for. Unsectarian. Controlled by a board of lady managers, with an advisory board of gentlemen. Supported by voluntary con-

BROOKLYN — (Continued).

tributions and an annual appropriation from the city. Mrs. Henry Faten, first directress; Miss Delia Danchy, second directress; Mrs. H. L. Palmer, third directress; Mrs. Charles W. Butler, corresponding secretary; Mrs. Alex. R. Thompson, Jr., recording secretary; Mrs. David Hustace, treasurer, all of Brooklyn. Apply to the executive committee of the managers or to the matron at the Nursery at any time.

Brooklyn Woman's Homeopathic Hospital and Dispensary is now changed to the Memorial Hospital, which see in this division.

House of St. Giles the Cripple. Incorporated February 1, 1891, under the general statute. No. 193 State street. Opened in September, 1891, as a home and hospital for crippled children.—Receives destitute crippled children of either sex, without regard to color or nationality, whenever beds are available, free of charge, and provides medical and surgical treatment with mental, religious and industrial instruction to the same. No contagious or epileptic cases are admitted. Capacity for twenty-five to thirty inmates at the new home. Receives patients also from New York city. Controlled financially by a board of trustees, otherwise by the Sisters in charge. Non-parochial and wholly dependent upon charitable contributions for daily maintenance. Rev. H. O. Riddel, chaplain; Dr. George Wackerhagen, house surgeon, 326 Schermerhorn street; Dr. Wm. F. Dudley, M. D., house physician and treasurer, 301 Henry street; Sister Sarah, sister in charge, to whom apply in person or by letter at any time.

Long Island College Hospital of the City of Brooklyn. Henry street, near Pacific. (See class VII, division 1.)

Memorial Hospital, formerly "The Brooklyn Woman's Homeopathic Hospital and Dispensary (The)." Incorporated April 20, 1883, under the general statute; and on March 15, 1891, the name of the society was changed by order of the Supreme Court of New York for Kings county, to "Memorial Hospital." Opened as a Dispensary in 1881, and the hospital was added

BROOKLYN — (Continued).

in 1887. No. 200 South Oxford street. The Dispensary, with classified clinics, is maintained at No. 811 Bedford street.—To furnish medical and surgical advice and treatment by women physicians to women and children; also comfortable accommodations for such women and children as may require hospital residence during such treatment. For all who are suffering, irrespective of creed, nationality or color; free to those can not pay, but all are encouraged to pay even a small amount. No contagious, delirium-tremens and syphilitic cases are received. Capacity of hospital, twenty-five beds. Average number of inmates, twenty. One hundred and ninety beneficiaries last year. Maintains also a Memorial Training School for Nurses. Controlled by a board of managers. Supported by charitable donations and \$1,500 from the State and excise fund. Mrs. J. H. Burtis, president, 121 Quincy street; Mrs. Anna B. Hallock, vice-president, 243 Dean street; Miss A. K. Merrieles, recording secretary, 486 Greene avenue; Miss J. J. Cassidy, corresponding secretary, 703 Nostrand avenue; Mrs. C. C. Martin, treasurer, 194 Berkeley place. General C. T. Christensen, Brooklyn Trust Company, treasurer of the building fund. Apply to the resident physician, or to any member of the hospital staff.

St. Mary's Female Hospital (including "St. Mary's Maternity and Infant's Home of the City of Brooklyn.") Incorporated April 18, 1868, under the general statute. Amended by chapter 197, Laws of 1892, and of May 1, 1893. Opened in May, 1868. No. 155 Dean street.—To provide a hospital to be devoted exclusively to the treatment of diseases peculiar to females, and also a lying-in hospital. To care for and provide medical and surgical treatment for such other female patients as may be suffering from ailments peculiar to their sex. To nurture and care for such infants as may be born within their home or institution, and such other homeless or abandoned infants as may be intrusted to their and their successors' care. No contagious diseases admitted. The worthy poor, unable to pay for board and maintenance, are

BROOKLYN — (Continued).

received free, irrespective of nationality or religion. Private patients pay according to accommodations, etc. Capacity for fifty in the hospital and 150 in the Children's Home. Average number of inmates, 200. Last year 221 free patients were cared for in the hospital, 120 children received free of charge in the home. Controlled by a board of trustees. Supported by an appropriation from the city, by voluntary contributions and by board of patients. Under the charge of the Sisters of Charity. Rt. Rev. Charles McDonnell, D. D., president, Clermont avenue; John D. Keiley, vice-president, 213 Clermont avenue; Edward J. Doolley, secretary, 377 Fulton street; Sister M. Dolorosa, sister in charge, to whom apply at the hospital, or to any of the officers. The hospital is open on Monday, Thursday and Saturday of each week from 12 to 2 p. m. to receive applications by outdoor patients for treatment, advice and medicine, which are furnished without charge.

BUFFALO — ERIE COUNTY.—Buffalo Homeopathic Hospital.

Cottage and Maryland streets. (See class VII, division 1.)

Buffalo Children's Hospital. Incorporated May 23, 1892, under chapter 95, Laws of 1889. Opened September 6, 1892. No. 219 Bryant street.—For the purpose of erecting, establishing, maintaining and operating a hospital for the medical and surgical treatment of sick, crippled and injured children, between the ages of 2 and 14 years, except those afflicted with contagious diseases. All cases must either pay or be paid for, unless the patient is placed on a free bed. Capacity for eighteen. Average number of patients, twelve. Controlled by a board of nine managers. Supported by subscriptions, board of patients and orders from the poormaster. Mrs. George L. Truscott, president, 335 Delaware avenue; Mrs. G. H. Lewis, vice-president, 656 Seventh street; Mrs. Bernard Bartow, secretary, 220 Franklin street; Miss Martha L. Williams, treasurer, Main street. Apply to the president, or to the physicians in charge at the hospital at any time.

BUFFALO — (Continued).

Buffalo Widows' Asylum. Incorporated January 21, 1852, under the general statute. No. 126 Edward street.—To found and sustain an asylum for poor widows, for poor lying-in women and for infants, and for no other or different purpose. (See also class V, division 2.)

Ingleside Home for Reclaiming the Erring. Harvard place. Maintains a hospital ward for women. (See class VIII, division 5.)

St. Mary's Lying-in Women's Hospital. Incorporated October 29, 1855, under the general statute. Opened in June, 1854. No. 126 Edward street.—To take care of lying-in women, but chiefly to screen and reform unfortunate and destitute young women, about to become mothers, and who have not been received into the institution previously. Capacity for forty. Average number of inmates, twenty-eight. Controlled by a board of officers and trustees, composed of Sisters of Charity. Supported by the city board of patients. Apply by letter or in person, at any time, to the sisters, at No. 126 Edward street.

CLIFTON — RICHMOND COUNTY (S. I.).—New York Mothers' Home of the Sisters of Misericorde, branch of the New York Institution, which see in this division.

NEW DORP (CEDAR GROVE) — RICHMOND COUNTY (S. I.).—St. John's Guild, Seaside Hospital. (See under New York City, class VII, division 9.)

NEW YORK CITY.—Babies' Hospital of the City of New York (The).—Incorporated September 14, 1887, under the general statute. Amendment to charter passed April 16, 1888. Opened October, 1888. No. 659 Lexington avenue, corner of Fifty-fifth street. Country Summer Home at Oceanic, N. J.—To provide medical and surgical aid and nursing to sick babies.—For the care of poor sick children suffering from non-contagious diseases, under 2 years of age; and to furnish systematic and practical training to

NEW YORK CITY — (Continued).

girls who desire to go out to service and care for infants and young children. Capacity for twenty-seven infants. Average number, twenty-five. In the hospital 300 patients were received and given 7,223 days treatment last year. In the Dispensary 214 patients were treated, and 537 visits made. Maintains a practical Training School for Children's Nurses; young girls of 18 or more years of age are taught the management and training of sick and well children, how to prepare their food, to bathe and dress them, and to detect any signs of ill-health. Applicants must apply to the superintendent of nurses. Controlled by a board of managers. Supported by voluntary contributions, and since June 1, 1891, by aid from city funds, equivalent to about one-third of the expenditures. Mrs. Joseph T. Low, president, 18 East Fortieth street; Mrs. Andrew H. Smith, vice-president, 22 East Forty-second street; Mrs. Bryce Gray, Jr., recording secretary, 554 Fifth avenue; Mrs. Edward H. Landon, corresponding secretary, 5 East Sixty-fifth street; Mrs. Kate V. S. Olcott, treasurer, 38 West Thirty-ninth street. Apply with children for examination at the hospital from 9 a. m. to 12 m., and at any time to the matron or physician in charge.

Babies' Wards of the "New York Post-Graduate Medical School and Hospital." No. 226 East Twentieth street. (See class VII, division 1.)

Children's Hospital, Department of Public Charities and Correction (Randall's island).—For the care and treatment of sick and crippled children, over 2 and under 16 years of age. Apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

Colored Home and Hospital. First avenue and Sixty-fifth street. (See class V, division 3.)

Emergency Hospital for Women, of the Department of Public Charities and Correction, 223 East Twenty-sixth street.—For the reception and care of those taken in labor in the street or on their way to the maternity hospital, Blackwell's island. (See class II, division 2.)

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Five Points House of Industry, Infirmary. No. 155 Worth street. (See class III, division 5.)

Hahnemann Hospital of the City of New York. Park avenue and Sixty-seventh street. (See class VII, division 1.)

Home for Incurables. Third avenue, corner of One Hundred and Eighty-second street, Fordham. (See class VII, division 3.)

House of St. Giles the Cripple. No. 193 State street, Brooklyn. Receives crippled children from New York. (See under Brooklyn's Hospitals, in this division.)

House of the Holy Comforter Free Church Home for Incurables. No. 149 Second avenue. (See class VII, division 2.)

Infants' Hospital of the Department of Public Charities and Correction (established June, 1866) (Randall's island).—For the care and treatment of orphan and foundling children under 2 years of age, and of destitute mothers with babes of less than 2 years old. Apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

Laura Franklin Free Hospital for Children in the City of New York.—Incorporated by special act, passed March 14, 1888. Opened November 21, 1886. Nos. 17 and 19 East One Hundred and Eleventh street.—To support and maintain in the city of New York, a hospital for the sick, maimed and injured children of the poor, wherein such children shall receive free of charge, all necessary care and medical and surgical treatment, under such by-laws and regulations as the board of trustees thereof may from time to time establish. The treatment is homeopathic and is for children between the ages of 2 and 12 years only, suffering from acute or curable chronic diseases, and of any race, color or religious creed; but none afflicted with incurable or contagious diseases are admitted. Patients applying from out of town, must send with their application, a certificate from a physician stating the nature of the disease and its stage. The hospital is under the charge of the Episcopal Sisters of St. Mary, and its capacity, fifty beds. Average number of inmates, thirty. Last year, over 206

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children were treated and cared for. Controlled by a board of trustees. Supported by an endowment fund and donations. Sidney S. Harris, president, 125 East Thirty-fifth street; Geo. De Forest Lord, vice-president, 3 West Thirty-fifth street; Frederick D. Weekes, secretary, 120 Broadway; Frederick D. Hitch, treasurer, Room 90, No. 1 Broadway. Apply for admission in person or by letter to the members of visiting committee, or to the sister in charge at the hospital or to the physicians or surgeons of the medical staff.

Maternity Hospital, of the Department of Public Charities and Correction; branch of City Hospital (late "Charity").—(Blackwell's island).—For the reception, care and treatment of indigent women, married or unmarried, during confinement. Capacity, 110 beds. Apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See class II, division 2.)

Mothers and Babies' Hospital (The). Incorporated May 4, 1893, under the general statute. Amendment of charter made May 18, 1893. Opened at 218 East Thirty-fourth street, adjoining the New York Polyclinic.—To erect, establish, maintain and operate a free hospital for the reception, care, maintenance, giving of medical and surgical advice, aid and treatment to poor persons afflicted with maladies, or physical injuries, or physical weaknesses, or deformities, or infirmities and dispense such medical and surgical advice and treatment free of charge to such persons. Margaret A. Bromley, Sarah J. Kissam, Mary H. Harper, Florence Sims Wyeth, Martha W. Wardwell, T. N. Bull, Minnie Blumenthal, Edward A. Ayers and William P. Martin, incorporators and directors. Apply for further information to the hospital.

New York Female Asylum for Lying-in Women. Incorporated by special act, chapter 90, Laws of 1827. Opened in 1828. No. 139 Second avenue.—To furnish suitable accommodations and attendance to respectable, indigent females, desiring an asylum during the period of their confinement in child-bed; or who also may receive the same care and attention in their own homes by the corps of district physicians connected with

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the asylum. Pay patients are also received when there is room. Has twenty-five beds in the asylum; average number of inmates from ten to twenty; and as many women are cared for at their homes as may be attended to by twenty-four district physicians, in the city at large. Last year, 129 women were nursed at the asylum, and 143 at their homes. Controlled by a board of thirty-three managers. Supported by income from invested funds, and by annual voluntary contributions. Mrs. Henry H. Anderson, first directress, 24 Gramercy park; Mrs. S. G. Wyncoop, secretary, 7 West Sixteenth street; Mrs. Wm. E. Vermilyea, treasurer, 10 East Sixteenth street. Apply at any time to the committee in charge at the asylum, prepared to show a satisfactory statement as to marriage, character and need of aid of the applicant.

New York Foundling Hospital. No. 175 East Sixty-eighth street. (See class V, division 2.)

New York Infant Asylum. Sixty-first street and Amsterdam avenue. (See class V, division 2.)

New York Infirmary for Women and Children. Incorporated January 19, 1854, under the general statute, as "The New York Infirmary for Indigent Women and Children." Amendatory act passed in April, chapter 178, Laws of 1864, whereby the name was changed to present title (by omitting the word "Indigent"); and in addition to the powers then exercised, the corporation shall have power to form and establish a "Medical School or College for Women," to be called "The Women's Medical College of the New York Infirmary for Women and Children," and to grant and confer the title of doctor of medicine, etc. The Infirmary, opened in 1853, is at No. 5 Livingston place, Stuyvesant square.—To furnish medical care and surgical treatment, and for the reception of confinement cases and others of non-contagious nature, chiefly among the sick poor living in the crowded district between Canal and Seventeenth streets, east of Third avenue. Those who are able pay five dollars a week for board; others are admitted free. Private patients, other than confinement

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cases, may apply personally or by letter, inclosing physician's certificate to resident physician, from 11 a. m. to 1 p. m. All patients are treated and cared for by women physicians. Contagious and chronic cases are excluded. Capacity, thirty-three beds. During 1891, 370 were received in the hospital. The Dispensary in the Medical College Building, No. 1 Livingston place, corner of East Fifteenth street, was opened in 1854, to provide free advice and medicines to the sick poor, who, when they are able, pay a small sum for their prescriptions. Open daily from 9 to 11 a. m. Patients too ill to visit the dispensary must send application before 1 p. m. During 1891, 6,817 patients were treated and 7,117 free visits made at the home by the Outdoor physician. The infirmary has a Fresh-air fund for sending women and children into the country during the summer months, and a Training School for Nurses, organized in 1886. Controlled by a board of trustees. Supported by an apportionment by the city for obstetrical cases, by voluntary contributions, pay patients and prescription fees. Robert Haydock, president; Robert Olyphant, vice-president; H. W. De Forrest, secretary, 15 West Thirtieth street; John T. Willets, treasurer, 303 Pearl street; Miss Julia Marshall, superintendent. Apply for admission at the hospital to the resident physician, and to the clerk at the dispensary, during office hours.

New York Medical College and Hospital for Women. Incorporated April 4, 1863, under the general statute. Opened in 1886. No. 213 West Fifty-fourth street.—A Homeopathic College for the medical education of women. The hospital is for the purpose of providing skilled medical care for women and children, by women physicians. Open to any sick woman or child, irrespective of creed or nationality, excepting those suffering from contagious diseases. Capacity, twenty-four beds. Average number of patients, eighteen to twenty. During the year 1891 there were 174 patients, ninety-seven of whom were received entirely free, and forty-three who paid part board. The dispensary gives free service and medicines

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to poor women and children daily, except Sundays, from 10 a. m. to 4 p. m. Over 1,590 patients were treated, and 5,420 prescriptions were dispensed during the year. Controlled by a board of trustees. Supported by voluntary contributions and board of private and pay patients. Henry S. Day, president, 128 West Seventy-fifth street; Mrs. N. L. McBride, corresponding secretary, 114 West Forty-seventh street; Cordelia Williams, M. D., recording secretary, 30 East Twenty-second street; Madame E. L. Demorest, treasurer, 21 East Fifty-seventh street; Mrs. Lambert, superintendent; Helen Beattie, M. D., house physician, to whom apply daily, in person, from 9 a. m. to 4 p. m., or by letter.

New York Mothers' Home of the Sisters of Misericorde. Incorporated November 22, 1888, under the general statute. Opened September, 1887. No. 531 East Eighty-sixth street. Branch house, Clifton, Richmond county (S. I.).-- To provide and maintain maternity hospitals and asylums for children in the State of New York. Maintains a maternity hospital with the necessary aid for destitute women and young unmarried girls, hitherto respectable, about to become mothers, irrespective of color, creed or race. Capacity for forty-eight, and a few private pay patients. Average number of inmates, thirty-six. Children left in charge of the Sisters are cared for temporarily, and if the mother is unable to support them, they are adopted out or sent to the New York Foundling Hospital (which see in Class V, division 2). Controlled by the Sisters of the Misericorde. Supported largely by voluntary contributions. Elmire Normandia (Sister S. M. Magdalene), president; Aurelie Baron (Sister St. Anne), vice-president; Matilda Lancelot (Sister M. Lucy), secretary; Mary Perras, directress. Sister Marie de la Misericordia, superioress, to whom apply at No. 531 East Eighty-sixth street.

New York Post-Graduate Medical School and Hospital (and Babies' Wards). No. 226 East Twentieth street. (See class VII, division 1.)

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New York Society for the Ruptured and Crippled. No. 135 East Forty-second street, corner Lexington avenue. (See class VII, division 2.)

Nursery and Child's Hospital of the City of New York. Incorporated March 30, 1854, under the general statute as the "Nursery for the Children of Poor Women." Amendatory act passed April 17th, chapter 366, Laws of 1869. Opened in 1854. No. 571 Lexington avenue, corner Fifty-first street; country branch at West New Brighton, Richmond county (Staten Island). Opened in 1870.—For the maintenance and care of the children of wet-nurses; the daily charge of infants whose parents labor away from home; the care of lying-in women and their infants, and the support and maintenance of destitute children intrusted to their care or admitted therein. Maintains and cares for sick children and infants under 8 years of age, and boards the children of wet-nurses. Children are also boarded and educated at ten dollars per month, and homes are provided for them, when necessary in the west. Destitute and homeless women of good character, and also unmarried women in their first confinement, if free from contagious diseases, are admitted to the lying-in ward, on the payment of a sum within their means, or they are received free, if they agree to remain three months after confinement to take care of two infants. Homes are also found for women and children. Applications for confinement should be made in person. The country branch at West New Brighton receives the older children, who are taught in the primary schools and kindergarten, and also the sick from the hospital in New York, during the summer months, accommodating about 235 in all. Total number cared for during the year 1891, in both institutions, 581 women and 1,033 children. Average number of inmates, 748. Controlled by a board of forty managers. Supported by city funds, voluntary contributions, legacies, house and laundry income, etc. Mrs. Algernon S. Sullivan, first directress, 16 West Eleventh street; Mrs. Wm. M. Kingsland, second

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directress; Mrs. Wm. C. Eggleston, third directress; Mrs. Edward Oothout, secretary, 48 West Ninth street; Mrs. F. N. Goddard, treasurer, 2 East Thirty-fifth street. Apply in person or by letter to the resident physician or matron at the hospital, No. 571 Lexington avenue, or at the country branch, from 1 to 2 p. m.

St. Andrew's Convalescent Hospital of "The St. John the Baptist Foundation. No. 213 East Seventeenth street. (See class VII, division 2.)

St. Andrew's Free Infirmary for Women. Incorporated December, 1891, under the general statute. Opened April 1, 1889. No. 108 One Hundred and Twenty-eighth street.—Instituted by the Ladies' Guild of St. Andrew's Protestant Episcopal Church for a free Infirmary and Dispensary for the care and treatment of diseases peculiar to women. Capacity for twenty-five beds, twenty-two of which are free. Average number of inmates, sixteen. Non-sectarian. The Dispensary is open daily, except Sunday, from 2 to 3 p. m., and there is in connection with the hospital a Training School for Nurses. Controlled by the hospital committee of St. Andrew's Church. Supported entirely by voluntary contributions. Malcolm McLean, M. D., surgeon in charge to whom apply at the infirmary, at 108 East One Hundred and Twenty-eighth street, at 2 p. m.

St. John's Guild, Children's Hospital. No. 157 West Sixty-first street. (See class VII, division 9.)

St. Mary's Free Hospital for Children. Incorporated August 9, 1888, under the general statute. Opened in September, 1870. Nos. 405 to 409 West Thirty-fourth street. Summer home at Rockaway Beach, L. I.; convalescent home at Peekskill, N. Y.—For the care and medical and surgical treatment of sick, maimed and crippled children, from 2 to 14 years of age, suffering from acute or curable diseases, but no chronic or contagious cases are admitted; and it shall be under the patronage and supervision of a bishop of the Protestant Episcopal Church in the United States, and in the diocese of New

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York. Children of the deserving poor, unable to pay, are received free, irrespective of creed, color or nationality; those who are able are expected to contribute what they can for the surgical appliances used for their children. Capacity of hospital, sixty beds. Average number of patients, fifty-eight. Over 400 cared for last year. The Dispensary provides free medical advice to children not eligible for admission to the hospital; a small charge is made for medicines. Over 2,284 new cases were treated and 3,464 prescriptions filled last year. The "Noyes Memorial Home," at Peekskill (opened in 1888), is exclusively for patients who have been treated in the hospital and whose diseases assume an incurable form, and for some of those convalescing from illness. Capacity for twenty. Over twenty-eight convalescent and chronic patients were cared for last year. The Summer Branch Home at Rockaway Beach, L. I., is for convalescent children from the hospital. Controlled by a board of seven managers elected annually from the trustees of the Sisterhood of St. Mary (Protestant Episcopal). Supported by voluntary contributions. Conducted by the Sisterhood of St. Mary. Apply for admission to the hospital in person, or by letter to the Sister Superior, at any hour of the day and evening. Apply at the dispensary, at 409 West Thirty-fourth street, to the physician in charge during office hours.

Seaside Hospital of St. John's Guild, situated at Cedar Grove, New Dorp, Richmond county, S. I. (See class VII, division 9.)

Sloane Maternity Hospital of the "College of Physicians and Surgeons in the City of New York," incorporated by special act in 1807. The Hospital, which has not a separate charter, was opened January 1, 1888. Northeast corner of Fifty-ninth street and Tenth avenue. A lying-in hospital, containing thirty-nine beds, all of which are free in perpetuity: First, for the gratuitous care of poor women during confinement; second, as a means for the education in obstetrics of students of the College of Physicians and Surgeons. Women, after confinement, and those suffering from puerperal diseases, are not

NEW YORK CITY — (Continued).

admitted. Emergency cases are received at any hour. Average number of inmates (including twenty infants), fifty-five. During 1891 there were 409 beneficiaries. Controlled by a board of managers. Founded and endowed by Mr. and Mrs. Wm. D. Sloane. J. W. McLane, M. D., president, 51 West Thirty-eighth street; E. L. Partridge, M. D., secretary, 19 Fifth avenue; W. D. Sloane, treasurer, 642 Fifth avenue; E. A. Tucker, M. D., house physician, to whom apply at the hospital, week-days, from 1.30 to 3 p. m.

Willard Parker Hospital, of the Department of Public Health.

Corner of East Sixteenth street. (See class II, division 2.)

Womens' Hospital in the State of New York. Incorporated by special act, April 18, 1857. Amendatory acts passed April 7, chapter 119, Laws of 1858; May 27, chapter 343, Laws of 1883; and April 18, chapter 147, Laws of 1888. The hospital was opened in 1857. It continues the work of the "Women's Hospital Association," organized in 1847. Is situated between Forty-ninth and Fiftieth streets, Lexington and Fourth avenues.—To establish, maintain and conduct a hospital in the city of New York for the treatment of the diseases peculiar to women, and for the maintenance of a lying-in hospital. Worthy poor women, who are unable to pay surgeons' fees are admitted to free beds, upon recommendation; others pay board from six dollars a week and upwards; but medical attendance is free in all cases, except that each of the five attending surgeons has two rooms in which he may treat patients with whom, previous to their entering the hospital, he has agreed as to fees. For diseases peculiar to women only. Has an Outdoor and Dispensary service. Open every week-day at 9 a. m. and 2 p. m. for those women who have not the means to obtain adequate medical advice outside. One thousand four hundred and thirty-nine cared for and 6,008 consultations given in the outdoor department, and 205 free hospital patients last year. Capacity for 141 indoor patients. Average number, 109. Controlled by a board of governors. Supported by receipts

NEW YORK CITY — (Continued).

for patients' board, interest from invested funds, and by voluntary contributions. John E. Parsons, president, 30 East Thirty-sixth street; Julius Catlin, first vice-president, 16 East Forty-fifth street; Mrs. Russell Sage, second vice-president, 506 Fifth avenue; Charles N. Talbot, secretary, 62 Fifth avenue; James G. Cannon, treasurer, 72 East Fifty-fourth street; Mrs. F. F. Thompson, assistant treasurer, 283 Madison avenue. Apply to the superintendent at the hospital any week-day between 9 a. m. and 4 p. m.

ROCHESTER — MONROE COUNTY.—Rochester Infants' Summer Hospital of Ontario Beach (P. O. Rochester). (See class VII, division 9.)

SYRACUSE — ONONDAGA COUNTY.—St. Ann's Maternity and Foundling Asylum of Syracuse. Incorporated September 8, 1891, under the general statute, as the St. Joseph's Maternity and Foundling Asylum of Syracuse. Name was changed to present title by decision of Supreme Court, February 20, 1893. Opened in November, 1890. Corner of Tuttle and Carbon streets.—To reclaim fallen women and to gather and nourish abandoned or neglected infant children. Assists all who are poor or unfortunate, on condition of compliance with the rules and regulations of the organization. Thirty-two infants were received and cared for in St. Ann's Foundling Asylum last year. Controlled by a board of directors. Supported by voluntary contributions, and what can be obtained for care of inmates. John McCarthy, president, 210 Green street; John H. McDowell, vice-president, 212 Hawley street; Frank Hopkins, secretary, 519 Willow street; Thomas Emory, treasurer, 600 East Fayette street. Apply to Mrs. J. Toohill personally or in writing any day between 8 a. m. and 9 p. m. at the asylum.

Syracuse Women's and Children's Hospital and Training School for nurses. No. 1214 West Genesee street. No information has been received from the officers.

TARRYTOWN — WESTCHESTER COUNTY.—Hospital of the Provident Association of Tarrytown. (See class VII, division 1.)

WEST NEW BRIGHTON — RICHMOND COUNTY (S. I.).—Nursery and Child's Country Hospital (Country Branch). (See under New York, in this division.)

DIVISION 5.—WOMEN'S AND CHILDREN'S DISPENSARIES (INCLUDING LYING-IN CHARITIES).

BROOKLYN — KINGS COUNTY.—Brooklyn, E. D., Homeopathic Dispensary Association. No. 194 South Third street. (See class VII, division 6.)

Brooklyn Women's Homeopathic Hospital and Dispensary is now changed to "The Memorial Hospital," which see in Class VII, division 4.

Dispensary for Women and Children. Incorporated ————. Fourth avenue, near Twentieth street.—For the medical treatment of women and children of all ages. S. L. Martineau, M. D., president and manager. No information has been received from this institution.

Memorial Hospital Dispensary. No. 811 Bedford street. (See class VII, division 4.)

St. Mary' Female Hospital (including "St. Mary's Maternity and Children's Home"). No. 155 Dean street. (See class VII, division 4.)

NEW YORK CITY.—Babies' Hospital of the City of New York. No. 659 Lexington avenue, corner of Fifty-fifth street. (See class VII, division 4.)

Five Points House of Industry. No. 155 Worth street. (See class III, division 5.)

German Poliklinik of the City of New York. No. 78 Seventh street. (See class VII, division 6.)

Hahnemann Hospital of the City of New York. Park avenue and Sixty-seventh street. (See class VII, division 1.)

NEW YORK CITY — (Continued).

Harlem Dispensary for Women and Children. Incorporated in 1880, under the general statute. No. 2331 Second avenue.—For the free treatment of women and children. A nominal charge is made for medicines to those able to pay. Open daily, except Sundays, from 10 a. m. to 12 m. Average number treated annually, 1,300. Controlled by a board of managers. Supported by voluntary contributions and fees for medicines. Mrs. A. P. Baldwin, president; Miss Carrie Cox, secretary; Miss H. A. Sill, treasurer; Clara Steinbrenner, M. D., physician in charge, to whom apply at the dispensary.—Copied from the "New York Charities' Directory," as no reply has been received.

Ladies' Hebrew Lying-in Relief Society. Incorporated November, 1877. It is a constituent of the "United Hebrew Charities," at No. 128 Second avenue.—To aid worthy needy Hebrew mothers with medical attention, nurses, clothing and food during their confinement, if, after investigation, they are found unable to pay for medical help. Five hundred and forty-nine beneficiaries last year. Controlled by the Ladies' Committee of the Central Office of the United Hebrew Charities. Supported by the membership subscriptions. Mrs. F. A. Cohen, president, 244 West Fifty-second street; Mrs. J. Hess, vice-president, 136 West Sixty-fourth street; Mrs. I. S. Mack, secretary, 124 West Seventy-eight street; Mrs. R. Lewisohn, treasurer, 713 Park avenue. Apply at the office of the United Hebrew Charities, at 128 Second avenue, during office hours.

Midwifery Dispensary. Co-operates with the incorporated "Society of the Lying-in Hospital of the City of New York." Organized January 1, 1890. No. 312 Broome street.—To supply medical attendance in confinement to the poorer classes at their own homes, who, at present, depend largely upon ignorant midwives; and, second, to provide the opportunity for proper education in obstetrics to medical men and students, who have not been instructed in the practical management of lying-in women. Patients who are able are expected

NEW YORK CITY — (Continued).

to pay a moderate charge; otherwise, careful attendance is furnished gratuitously. During 1891 there were 650 beneficiaries and 199 confinements received attention and care. Controlled by a board of managers. Supported chiefly by voluntary contributions. Edward W. Lambert, M. D., president; H. McM. Painter, M. D., secretary; Samuel W. Lambert, M. D., treasurer; Asa B. Davis, M. D., resident physician, to whom apply at any time, at 312 Broome street.

New York Female Asylum for Lying-in Women. No. 139 Second avenue. (See class VII, division 4.)

New York Foundling Hospital. No. 175 East Sixty-eighth street. (See class V, division 2.)

New York Infirmary for Women and Children. No. 5 Livingston place, Stuyvesant square. (See class VII, division 4.)

New York Medical College and Hospital for Women. No. 213 West Fifty-fourth street. (See class VII, division 4.)

New York Polyclinic Dispensary. No. 214 East Thirty-fourth street. (See class VII, division 1.)

New York Post-Graduate Medical School and Hospital (and Babies' Wards). No. 226 East Twentieth street. (See class VII, division 1.)

Nursery and Child's Hospital. No. 571 Lexington avenue, corner Fifty-first street. (See class VII, division 4.)

St. Andrew's Free Infirmary for Women. No. 108 East One Hundred and Twenty-eighth street. (See class VII, division 4.)

St. Mary's Free Hospital for Children. No. 405 West Thirty-fourth street. (See class VII, division 4.)

Sick Children's Mission of the Children's Aid Society. No. 287 East Broadway. (See class III, division 3.)

Society of the Lying-in Hospital of the City of New York. Incorporated by special act, March first, chapter 23, Laws of 1799. The Society has no building.—For the useful purpose of establishing an asylum for the reception of women in a state of pregnancy, who are unable to procure the necessary medical assistance and nursing during the period of their

NEW YORK CITY — (Continued).

confinement. Assistance in nursing, food, medicine and clothing was given to 141 patients at their own homes, and medical attendance furnished at the homes of the patients to 955 additional, through the "Midwifery Dispensary," 312 Broome street, last year. Controlled by a board of thirteen governors elected annually. Supported by income from an endowment fund and voluntary contributions. Egerton L. Winthrop, president; John A. Weekes, vice-president; Andrew Warner, secretary and treasurer, 20 Union square, to which address apply by letter only, on any business day, to the "Society of the Lying-in Hospital."

Twenty-five Cent Provident Dispensary for Self-supporting Women and Girls (The). Not incorporated yet. Organized in 1880. 93 Clinton place.—To furnish medical aid, advice and helpful assistance, exclusively by women physicians, to all self-supporting women, and young girls, for a nominal charge of twenty-five cents, but none are refused owing to inability to pay the fee. Controlled by a board of supervisors, viz.: John L. Griffin, ex-Judge Gideon J. Tucker, and F. G. Johnson, M. D., treasurer, and Ella A. Jennings, M. D., resident physician. Supported by voluntary contributions and medical fees. Apply to resident physician from 3 to 9 p. m.

Woman's Hospital in the State of New York. Forty-ninth and Fiftieth streets, between Fourth and Lexington avenues. (See class VII, division 4.)

Yorkville Dispensary and Hospital for Women and Children. Incorporated November 29, 1886, under the general statute. Opened in September, 1886. No. 1307 Lexington avenue.—To establish, manage and conduct a non-sectarian institution, comprising a dispensary and hospital, for the special treatment of diseases of women and children, and auxiliary departments in connection therewith, the benefit of such institution to be given gratuitously to patients unable to pay therefor, and to other patients for compensation, but all moneys so received to be applied to the support of the institution. The work at present is confined to the Dispensary for

NEW YORK CITY — (Continued).

treatment of poor women and children only. Controlled by a board of trustees and officers. Supported by voluntary contributions. John Van Dolsen, president, 2102 Madison avenue; R. H. Tracy, first vice-president, 329 West One Hundred and Twenty-ninth street; Geo. H. Stonebridge, second vice-president, 72 East Eighty-third street; Wm. C. Norris, secretary, 125 East Eighty-third street; John H. Scheel, treasurer, 121 East Eighty-third street. Apply at the dispensary daily, except Sundays, from 3 to 4 p. m.

DIVISION 6.—GENERAL DISPENSARIES. (N. B. Many of the General Dispensaries have also Departments for all the Special Classes of Diseases.)

ALBANY — ALBANY COUNTY.—Albany City Homeopathic Hospital and Dispensary. No. 123 North Pearl street. (See class VII, division 1.)

Albany Hospital and Dispensary. Corner of Eagle and Howard streets. (See class VII, division 1.)

St. Peter's Hospital of the City of Albany. Broadway, corner North Ferry street. (See class VII, division 1.)

BROOKLYN — KINGS COUNTY.—Atlantic Avenue Dispensary of the Church Charity Foundation of Long Island. Opened in 1873. Atlantic and Waverly avenues.—To provide medical and surgical aid and treatment to the sick poor of the city of Brooklyn. No contagious cases received. Six thousand five hundred and fifty patients were treated and 7,782 prescriptions dispensed last year. Controlled by a board of physicians. Supported chiefly by the city funds. Rev. H. T. Scudder, president, 187 Berkeley place; Rev. W. W. Beltinger, vice-president, Classon and Willoughby avenues; Thomas Hegeman, secretary, 485 Halsey street; James W. Whitney, treasurer, 138 Second place. Apply at the dispensary during office hours.

Bedford Dispensary Association. Incorporated June, 1881, under the general statute. The dispensary was opened June,

BROOKLYN — (Continued).

1881. Nos. 343 and 345 Ralph avenue, near Herkimer street.— To provide medical and surgical treatment to the needy sick poor of Brooklyn, both at the dispensary and at their own homes. A ward containing two beds has been recently opened in the new building for patients needing surgical operations, whose environments at home are not such as will safely permit of operative work. During last year, 3,436 new patients were treated and 35,137 prescriptions dispensed; 900 visits were made by physicians to the homes of patients, and 700 visits were also made by the visiting committee. Unsectarian. Controlled by a board of trustees, assisted by a ladies' auxiliary committee. Supported by voluntary contributions. Wm. G. Hoople, president, 1475 Pacific street; Thos. P. Wilkinson, vice-president, 78 Herkimer street; E. A. Day, M. D., secretary, 306 Sumner avenue; Alfred Tilly, treasurer, 1395 Atlantic avenue. Apply at the dispensary daily, except Sunday, from 2 to 3 p. m. Emergency and injury cases are received at any time.

Brooklyn Central Dispensary. Incorporated March 28, 1856. Opened in 1856. No. 29 Third avenue.—For the purpose of extending charitable aid and assistance gratuitously to all needy persons afflicted with disease, who may make application for relief, and are unable to pay for it. Twelve thousand two hundred and eighty-seven patients were treated, and 14,225 prescriptions dispensed last year. Controlled by a board of directors. Supported by city appropriations, donations and fund held by the Supreme Court. Theophilus Olena, president; Thos. E. Pearsall, first vice-president; Michael H. Hagerty, second vice-president; George V. Brower, secretary; N. H. Clement, treasurer. Apply to the physician in charge daily, except Sundays and holidays, from 1 to 3 p. m., at the dispensary.

Brooklyn City Dispensary. Incorporated March 13, 1850. Organized and opened on September 3, 1846. No. 11 Tillary street.—To furnish gratuitously, medical advice and medicines to the sick poor of the city of Brooklyn who are unable

BROOKLYN — (Continued).

to pay for same, and who do not require hospital treatment. Gives treatment also in diseases of the eye and ear. Seventeen thousand and seventeen cases were treated, and over 15,000 prescriptions dispensed free of charge last year. Controlled by a board of trustees. Supported by appropriations from the city and excise fund, and the income from a small endowment. Samuel Rowland, president, 79 Willow street; Robert S. Bussing, vice-president, 20 Garden place; H. W. Beebe, secretary, 267 Henry street; L. C. Bond, treasurer, 180 Remsen street; J. B. Jones, M. D., medical director. Apply to the medical staff at the dispensary.

Brooklyn Eclectic Dispensary.¹ Incorporated by special act May tenth, chapter 800, Laws of 1869. No. 142 Prince street, near Myrtle avenue.—To maintain a public dispensary in the city of Brooklyn, for the benefit of the sick poor who are unable to pay for medical services, and who are expected to apply in person and be examined by the physicians in charge, who will furnish the necessary medicine. No contagious diseases are received. Six thousand and sixty-nine patients were treated, 8,155 prescriptions dispensed, and 155 gratuitous visits were made at the home of the patients last year. Controlled by a board of trustees. Supported by private donations and an appropriation of \$1,500 from the city funds. W. J. Barker, president, 120 Adelphi street; J. R. Mackinnon, vice-president, 350 Gates avenue; John Wilshear, secretary, 130 DeKalb avenue; H. B. Smith, M. D., treasurer, 131 Fort Greene place; G. P. Carman, M. D., house surgeon, to whom apply daily, except Sundays, from 10 a. m. to 2 p. m.

Brooklyn, Eastern District, Dispensary and Hospital. (See class VII, division 1.)

Brooklyn, Eastern District, Homeopathic Dispensary Association. Incorporated March 6, 1872, under the general statute. Nos. 194 and 196 South Third street. A medical institute for the treatment of all general medical and surgical cases of the needy and sick poor, including diseases of children, of women, of the heart and lungs, of the eye and ear, of the throat and of

BROOKLYN — (Continued).

the skin. Upon the principles of the law "*Similia Similibus Curantur*." Unsectarian. Sixteen thousand patients were cared for, and 14,046 prescriptions dispensed last year. Controlled by a board of trustees. Supported by city appropriations and by voluntary contributions. George V. Tompkins, president, 96 Wilson street; M. B. Streeter, vice-president, 84 North Second street; H. D. Schenck, M. D., secretary, 247 Macdonough street; E. C. Wadsworth, treasurer, 511 Bedford avenue. Apply at the dispensary daily, except Sundays and holidays, from 2.30 to 4 p. m.

Brooklyn Homeopathic Dispensary. Incorporated December 5, 1852. Amendatory acts, passed February ninth, chapter twenty-seven, Laws of 1871; July first, chapter 387, Laws of 1882. Attached to the Brooklyn Homeopathic Hospital. Opened January, 1853. No. 111 Cumberland street.—For the gratuitous relief of the sick and destitute by homeopathic remedies. No contagious cases are received. Last year, 10,563 patients were treated, and 25,749 prescriptions dispensed. Controlled by the board of directors of the Homeopathic Hospital. Supported by city funds (\$1,500) and by voluntary contributions. Alton G. Warner, M. D., president, 71 Orange street; Walter S. Rink, M. D., secretary, 272 Halsey street. Apply at the dispensary during office hours.

Brooklyn Hospital. Raymond street and DeKalb avenue. (See class VII, division 1.)

Bushwick and East Brooklyn Dispensary Association. Incorporated ———, 1878, under the general statute. Myrtle avenue, corner Lewis avenue.—To establish and maintain a dispensary and hospital for the sick poor of the city of Brooklyn, eastern part. The hospital is not yet opened, but all cases except smallpox) are treated at the Dispensary and by the visiting physicians in the homes of the patients. Last year 6,111 patients received medical care, and 41,789 prescriptions were dispensed, for which a nominal charge was made except to those able to pay. Controlled by a board of managers. Supported by voluntary contributions, city funds and by pre-

BROOKLYN — (Continued).

scription fees. John W. James, president, 45 Halsey street; Robert Henderson, first vice-president, 686 Willoughby avenue; Judson C. Watson, second vice-president, 1020 Myrtle avenue; Insall Raiman, secretary, 704 Quincy street; Eugene F. Barnes, treasurer, 84 Monroe street; James S. King, M. D., president medical staff, 823 DeKalb avenue. Apply at the dispensary, during office hours.

Central Homeopathic Dispensary. Incorporated October 23, 1883, under the general statute. No. 39 Sumpter street.—To establish and maintain in the southeastern portion of the city of Brooklyn, a Dispensary where homeopathic medical and surgical aid shall be gratuitously furnished to the poor. Unsectarian. Has also an outdoor department, covering a limited area, through which the visiting committee provide the necessities of life, and comfort to the destitute, in their homes. No contagious cases are received. Seven thousand seven hundred and fifty-seven patients were treated, 172 operations were performed, and 11,097 prescriptions were dispensed last year. Controlled by a board of managers. Supported by excise money and an appropriation of \$1,500 by the city and by contributions. Mrs. Wm. Hart, president, 154 Hancock street; Mrs. John F. Cook, vice-president, 128 New York avenue; Mrs. Henry M. Johnston, secretary, 67 Downing street; Mrs. Jerome Allen, treasurer, 398 McDonough street. Apply at the dispensary daily, except Sundays, from 2 to 4 p. m.

Church Charity Foundation of Long Island (The). (See class V, division 2; also Atlantic Avenue Dispensary, which see in this division.)

Gates Avenue Homeopathic Dispensary of Brooklyn. Incorporated March 11, 1867, under the general statute. No. 13 Gates avenue.—To establish and maintain in the city of Brooklyn, dispensaries for the gratuitous medical relief of the sick and destitute, by means of the homeopathic treatment, who are unable to pay for medical services. Unsectarian. Six thousand seven hundred and fifty-eight patients

BROOKLYN — (Continued).

were treated, 16,154 prescriptions dispensed, and 2,136 visits were made by physicians at the houses of the poor last year. Controlled by a board of trustees. Supported by donations, bequests and city appropriations. R. D. Benedict, president, 363 Adelphi street; V. Aldridge, secretary, 217 Prospect place; Wm. B. Boorum, treasurer, 458 Clinton avenue; J. Lester Keep, M. D., medical director, 460 Clinton avenue; C. L. Johnston, M. D., house physician, to whom apply, except Sundays and legal holidays, from 1 to 3 p. m.

Helping Hand of Brooklyn. No. 136 Lawrence street. (See class VIII, division 5.)

Hillside Homeopathic Dispensary. No. 478 Bergen street. No answer received.

International Medical Missionary Society. Maintains dispensaries as follows: No. 1, 412 Van Brunt street; No. 2, 305 Concord street, in which about 4,000 patients are treated annually. For further particulars of the work of the society see under New York Dispensaries in this division.

Kings County Hospital Dispensary of Department of Charities and Correction (Flatbush). Apply at 29 Elm place, corner of Livingston street.

Long Island College Hospital of the City of Brooklyn. Henry street, near Pacific. (See class VII, division 1.)

Long Island Throat and Lung Hospital and People's Dispensary. No. 1043 Gates avenue. (See class VII, division 7.)

Lucretia Mott Dispensary and Infirmary. Formerly at 315 Atlantic avenue, has now ceased to exist under and pursuant to the provisions of chapter nineteen of the Laws of 1892, approved by the Governor, February 5, 1892.

Polyclinic Dispensary. Opened in 1890. Myrtle avenue, near Central.—For the free treatment of the sick poor of all ages. Unsectarian. James M. Griffith, M. D., manager. No answer was received.

St. Catherine's Hospital Association in the City of Brooklyn. (See class VII, division 1.)

BROOKLYN — (Continued).

St. Catherine's Hospital of the Roman Catholic Church of the Most Holy Trinity. Bushwick avenue, between Ten Eyck and Maujer streets. (See class VII, division 1.)

St. Mary's Hospital of the City of Brooklyn. Prospect place, corner of Rochester and Buffalo avenues. (See class VII, division 1.)

St. Peter's Hospital. Henry street. (See under Sisters of the Poor of St. Francis, class VII, division 1.)

Sisters of the Poor of St. Francis, St. Peter's Hospital. Henry street, near Congress. (See class VII, division 1.)

Southern Dispensary and Hospital in the City of Brooklyn (The). Incorporated March 17, 1873, under the general statute. No. 119 Third place.—For the medical and surgical treatment of the poor of the city who are unable to pay for same. All applicants for attendance are treated, without question, there being no restrictions. Six thousand and sixty beneficiaries last year. Controlled by a board of fifteen trustees. Supported by voluntary contributions and by appropriations from the city and excise fund. A. J. Perry, president, 30 First place; F. B. Richardson, vice-president, 200 Van Brunt street; T. H. Warburton, secretary, 45 Third place; W. H. Middendorf, treasurer, Court street and Third place. Apply to Dr. W. L. Pierson, chief of the staff at the dispensary daily, from 2 to 4 p. m.

BUFFALO — ERIE COUNTY.—Buffalo City Dispensary. Incorporated in February, 1859, under the general statute. Organized in March, 1847.—For the gratuitous medical and surgical advice and treatment with medicines free to the worthy poor, who pay a small sum for the latter if able to do so. The dispensary is controlled by the same board of trustees as "The Buffalo Society for the Relief of the Poor," and is supported by endowment and special funds. Apply to the dispensary physicians through the above-named society, Oscar Cobb, secretary, No. 37 Church street.

BUFFALO — (Continued).

Buffalo Homeopathic Hospital Dispensary. No. 11 East Genesee street. (See class VII, division 1.)

Buffalo Hospital of Sisters of Charity. No. 1833 Main street. (See class VII, division 1.)

Buffalo Medical and Surgical Dispensary. Incorporated October 24, 1884, under the general statute. Opened 1884. No. 203 Ellicott street.—To provide medical and surgical aid gratuitously to such worthy sick and indigent persons, as are unable to pay for medical advice. A charge of ten cents for each prescription is made to those able to pay. Average number treated daily, thirty. About 500 beneficiaries annually. Controlled by the trustees of the medical department of Niagara University. Supported by voluntary contributions of the faculty of said university. A. A. Hubbell, M. D., president, 212 Franklin street; Floyd S. Crego, M. D., vice-president; S. A. Dunham, M. D., secretary and treasurer, West Chippawa street. Apply at the dispensary daily, except Sundays and holidays, from 3.30 to 4.30 p. m.; from 11 to 12 a. m. for diseases of the eye and ear only.

Fitch Provident Dispensary of the Charity Organization Society of Buffalo. (See class I.) Not separately incorporated. Opened August, 1885, in the Fitch Institute, corner of Swan and Michigan streets.—To give medical and surgical aid to the worthy poor of Buffalo, who are unable to pay for same. Over 1,969 patients treated and 8,000 prescriptions dispensed. Controlled by a committee of the central council of the Charity Organization Society. Supported by fees from patients for medicine, and appropriation from Fitch income held in trust by the above society. Leon T. Harvey, M. D., medical director. Apply at the dispensary, daily at 4 p. m.

Medical and Surgical Free Dispensary, formerly at 11 East Genesee street, has been discontinued.

COOPERSTOWN — OTSEGO COUNTY.—Thanksgiving Hospital for Cooperstown. (See class VII, division 1.)

ELMIRA — CHEMUNG COUNTY.— Arnot-Ogden Memorial Hospital. (See class VII, division 1.)

FLUSHING — QUEENS COUNTY.— Hospital and Dispensary of the town of Flushing. Parsons and Forest avenues. (See class VII, division 1.)

GENEVA — ONTARIO COUNTY.— Dispensary of the Medical and Surgical Hospital of Geneva, N. Y. (See class VII, división 1.)

KINGSTON — ULSTER COUNTY.— City of Kingston Hospital. (See class VII, division 1.)

LONG ISLAND CITY — QUEENS COUNTY.— Astoria Hospital Dispensary. (See class VII, division 1.)

St. John's Hospital. (See class VII, division 1.)

NEW YORK CITY.— Avenue A Dispensary of the Wilson Industrial School for Girls. Incorporated ————. Opened in 1884. Northwest corner of Avenue A and Eighth street.— For the free treatment of the sick poor of the neighborhood, including patients with chronic diseases. Carried on chiefly by the ladies of the Wilson Mission, who give the room free of rent. Supported by voluntary contributions. Apply to the physician in charge, from 10 a. m. to 12 m., week days only.

Beth Israel Hospital Association. No. 196 East Broadway. (See class VII, division 1.)

Bloomingdale Clinic. Opened 1891. To be incorporated soon. No. 223 West Ninety-ninth street.— To give medical relief and medicine to the deserving poor of that neighborhood; 333 new patients, and 880 total number treated last year. Controlled by six physicians, who act as a board of managers. Supported by voluntary subscriptions. Samuel G. Tracy, M. D., president, 33 West Ninety-third street; Thomas Stevenson, Jr., M. D., secretary, 66 East One Hundred and Twenty-sixth street; Edward J. Ware, M. D., treasurer, 102 West Ninety-third street. Apply at the dispensary, daily, except Sundays and holidays, from 2 to 4 p. m.

NEW YORK CITY — (Continued).

Bureau of Medical and Surgical Relief for Outdoor Poor in Twenty-third and Twenty-fourth Wards of the Department of Public Charities and Correction. Opened March, 1876. No. 703 Westchester avenue, near Brook avenue.—For purpose indicated in title. Controlled by a consulting board of the Commissioners of Charities and supported by the city S. H. McIlroy, M. D., president, One Hundred and Forty-first street and Alexander avenue; Morris Dietsch, secretary, One Hundred and Forty-ninth street and Southern boulevard; J. E. Comfort, M. D., J. J. Williams, M. D., and T. C. Jones, executive committee. Apply at the dispensary week days from 10 a. m. to 4 p. m. Sundays, from 2 to 3 p. m. (See class II, division 2.)

Church Hospital and Dispensary of the Protestant Episcopal Church in the City of New York. Incorporated January 26, 1892, under the general statute; amendment to charter made March 24, 1893. Nos. 102 and 104 West Forty-first street.—The Dispensary only as yet is in active operation.—To centralize the medical mission work of the Episcopal Church in this city by the reception, care, maintenance and giving of medical and surgical advice, aid and treatment to such members of the Protestant Episcopal Church in the city of New York, as are afflicted with maladies, physical injuries or physical weaknesses, deformities or infirmities. Particularly for the poor of that church, who are unable to pay for medical treatment, but who are charged a small sum for prescriptions when able to pay. Infectious and contagious cases are excluded. Controlled by a board of trustees. Supported by voluntary contributions. Edward A. Quintard, president, 58 West Thirty-sixth street; A. M. Palmer, vice-president, 25 East Sixty-fifth street; Richard Kalish, secretary, 50 West Thirty-sixth street; Thos. L. James, treasurer, 36 East Forty-second street. In charge of the matron, Miss Holcombe, to whom apply.

Demilt Dispensary, in the City of New York. Incorporated March 22, 1851, under the general statute. Opened in 1851.

NEW YORK CITY — (Continued).

No. 401 Second avenue, corner of Twenty-third street. The district is bounded by Fourteenth street, Sixth avenue, Fortieth street and East river.—To provide and furnish medicines and medical and surgical aid to such persons as may be in need thereof, and who are unable, by reason of poverty to procure the same. A nominal charge of ten cents for medicines is made to those able to pay. Three visiting physicians attend such patients at their homes who are too sick to come to the dispensary. Open week-days from 9 a. m. to 4 p. m.; on Sundays and holidays, from 1 to 2 p. m., and on Tuesdays and Fridays from 7 to 9 p. m., for women employed during the day. During last year, 27,735 patients were treated, 6,060 in their homes, 77,358 consultations, and 66,137 prescriptions were dispensed. The dispensary also maintains public baths for adults and children, open week-days from 8 a. m. to 5 p. m., and on Tuesdays and Fridays from 7 to 9 p. m. Ten cents for use of soap and towel is charged to those able to pay, but none are refused. Controlled by a board of twenty-five managers. Supported by voluntary contributions. Charles C. Savage, president; Alfred R. Kimball, first vice-president; J. P. Humbert, second vice-president; Frederic S. Wells, secretary; John W. Cochrane, treasurer, 375 Broadway; Miles H. Nash, M. D., house physician, to whom apply during office hours.

Eastern Dispensary in the City of New York. Incorporated by special act in 1832. Ceased work in 1891, when its property and work were consolidated with the "Trustees of the Good Samaritan Dispensary." Its corporate existence is preserved only to fulfil the requirements of such legacies as may have been left to it. (See "The Good Samaritan Dispensary in the City of New York," in this division.)

East Side Dispensary (The). Incorporated November 1, 1890, under the general statute. No. 327 East Third street.—To provide free medical and surgical advice and treatment to the poor and needy who are unable to pay for private services, except such as have contagious diseases. Open daily, except

NEW YORK CITY — (Continued).

Sundays and holidays, from 1 to 5 p. m. A charge of ten cents is made for each prescription, to those able to pay. Nine thousand patients were cared for last year. Controlled by a board of trustees. Supported by voluntary contributions, prescription fees and by the comptroller's fund. Felix Pfeiffer, M. D., president, Tenth street, near Third avenue; Lewis Price, M. D., treasurer, 313 East Third street; Julius Stein, M. D., corresponding secretary, 338 East Fourth street, to whom apply at the dispensary, or at his house.

Eclectic College Free Dispensary. Incorporated in 1886, under the general statute. No. 239 East Fourteenth street.—For the gratuitous care and treatment of the sick poor, daily, except Sundays and holidays, from 10 a. m. to 12 m., and from 2 to 5 p. m. Last year over 4,500 patients were treated at the dispensary, 1,180 were visited in their homes, and 9,850 prescriptions were dispensed. Controlled by the directors of the college and medical staff. Supported by voluntary contributions and by the college. George W. Boskowitz, M. D., secretary and dean. Apply to C. W. Brandenburg, M. D., house physician in charge, during the hours named.

Five Points Dispensary of the Five Points House of Industry. No. 155 Worth street. (See class III, division 5.)

Fordham Reception Hospital, of the Department of Public Charities and Correction. (See class VII, division 1.)

Free Dispensary of New York Polyclinic. No. 214 East Thirty-fourth street. (See class VII, division 1.)

French Benevolent Society of the City of New York. Nos. 320 and 322 West Thirty-fourth street. (See class III, division 8.)

German Hospital and Dispensary in the City of New York. The dispensary is situated at No. 137 Second avenue. (See class VII, division 1.)

German Poliklinik of the City of New York (Die Deutsche Poliklinik der Stadt New York). Incorporated April 2, 1883, under the general statute. Opened May 17, 1883. No. 78 Seventh street.—To provide free outdoor medical, surgical and dental treatment for the relief of the worthy sick and dis-

NEW YORK CITY — (Continued).

abled poor, more particularly Germans, irrespective of creed, race or nationality. Has eight special departments. A small charge for prescriptions is made to those able to pay. During 1891 over 13,800 patients were cared for, 44,979 calls made, and 31,573 prescriptions dispensed. Controlled by a board of trustees. Supported by voluntary contributions, an annual entertainment and prescription fees. Anton von Palitschek, president, 149 East Twenty-first street; F. W. Lilienthal, M. D., vice-president, 306 East Fifteenth street; C. A. Von Ramdohr, M. D., secretary, 105 Seventh street; George C. Stiebeling, M. D., treasurer, 71 St. Mark's place. Apply to the physician in charge, daily, except Sundays and holidays, from 1 to 6 p. m.

Good Samaritan Dispensary in the City of New York (The). Incorporated in 1884, under the general statute. Northwest corner of Essex and Broome streets.—This dispensary was consolidated with "The Eastern Dispensary in the City of New York" June 31, 1891, and assumed its work, to provide free medical and surgical advice and treatment with medicines to all those who are too poor to pay for the same, living in the district bounded by the East river, Fourteenth street, First avenue, Allen and Pike streets. Open daily, except Sundays, from 9 a. m. to 5 p. m. A charge of ten cents for each prescription is made to all who are able to pay. During 1891 over 90,000 patients were treated at the dispensary and at their homes, and 103,900 prescriptions were dispensed; also, 40,000 bottles of sterilized milk prepared in the dispensary were furnished to 575 sick children, a small charge being made to those able to pay. Controlled by a board of trustees. Supported by donations, interest on investments, prescription fees, etc. Edward P. Sampson, president, 58 Reade street; Edward G. Black, vice-president, 44 Pine street; Wm. W. Ladd, Jr., secretary, Drexel Building; Samuel Riker, treasurer, 145 Nassau street; Thomas G. Gaunt, M. D., physician-in-chief. Apply from 9 a. m. to 5 p. m. at the dispensary.

Hahnemann Hospital of the City of New York. Park avenue and Sixty-seventh street. (See class VII, division 1.)

NEW YORK CITY — (Continued).

Harlem Dispensary. Incorporated February 25, 1869, under the general statute. Amendatory certificate filed in Albany, March 9, 1882. Institution opened in August, 1868. No. 160 East One Hundred and Twenty-sixth street. District is bounded on the south by One Hundred and Fourth street, west by Eighth avenue, and on the north and east by the Harlem river.—To furnish gratuitous medical and surgical treatment, also medicines, to those who are unable to pay for same, at the dispensary and in their own homes. Has also a department for eye, ear and throat diseases. Open daily, Sundays and holidays, from 1 to 3 p. m. Six thousand five hundred and four patients treated last year. A charge of ten cents is made for each prescription to those able to pay. Controlled by a board of twenty-four trustees. Supported by members' subscriptions and voluntary contributions. Henry P. McGown, president, 1982 Madison avenue; Henry H. Searle, secretary, 32 West One Hundred and Twenty-sixth street; Cyrus O. Hubbell, treasurer, 1 East One Hundred and Thirtieth street. Apply to the physician in charge during office hours.

Harlem Reception Hospital of the Department of Public Charities and Correction. Opened February 17, 1887. No. 533 East One Hundred and Twentieth street.—A reception hospital for emergency cases among the destitute poor, who are residents of New York, and are unable to employ medical aid. Capacity for thirty-eight. Average number of beds occupied, twenty-eight. Contagious, infectious and chronic cases are not received. Over 25,000 patients treated in the hospital and dispensary last year. Supported by the city. J. G. Truax, M. D., president of medical board, 17 East One Hundred and Twenty-seventh street; Eugene A. Smith, M. D., house surgeon, to whom apply at the hospital, through the police department.

House of Relief of the Society of the New York Hospital. No. 160 Chambers street. (See class VII, division 1.)

NEW YORK CITY — (Continued).

International Medical Missionary Society. Formerly the "New York Medical Missionary Society." Incorporated in 1886, under the general statute. Organized in 1881. Training institute and headquarters, No. 118 East Forty-fifth street. Students' residences at Nos. 118 and 121 East Forty-fifth street.—To heal the sick, preach the Gospel in New York and other cities, and to train young men and women to go abroad as medical missionaries. It maintains for the benefit of the sick poor seven dispensaries in New York and two in Brooklyn. Those in New York are as follows: No. 1, 81 Roosevelt street; No. 2, 545 East Eleventh street; No. 3, 81 Washington square, east; No. 4, 209 Madison street; No. 5, 2249 Second avenue; No. 6, 463 West Thirty-second street; No. 7, Rivington street. Those in Brooklyn are at: No. 1, 412 Van Brunt street; and No. 2, at 224 Concord street. The students are aided by providing them with a Christian home, by pecuniary aid when necessary, by Biblical and medical instruction, and by practical training in medical and Christian work at the missions of the society. During 1891, 8,329 patients were cared for, 22,370 visits made to the dispensaries and 3,400 patients were visited at their homes. Controlled by a board of eighteen managers, assisted by a Woman's Auxiliary Branch, which maintains the Woman's Students' Residence, at No. 121 East Forty-fifth street. Supported by voluntary contributions only. Stephen Smith, M. D., president; Benjamin C. Wetmore, vice-president; Edward A. Jones, recording secretary, 80 Broadway; William C. Stuart, corresponding secretary; Samuel Sloan, Jr., treasurer, 80 Cliff street; George D. Dowkontt, M. D., medical director, to whom apply at the institute, or at the several dispensaries.

Italian Home (Istituto Italiano). No. 179 Second avenue. (See class III, division 8.)

Manhattan Dispensary (and Hospital). Amsterdam avenue and One Hundred and Thirty-first street. (See class VII, division 1.)

NEW YORK CITY — (Continued).

Medical and Surgical Relief of Bellevue Hospital to the Outdoor Poor of the Department of Public Charities and Correction. Foot of East Twenty-sixth street. Apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street. (See class VII, division 1.)

Mount Sinai Hospital. Lexington avenue, between Sixty-sixth and Sixty-seventh streets. (See class VII, division 1.)

New York Dispensary. Incorporated April 8, 1795, under the general statute. Amendatory act, chapter 578, Laws of 1869. Opened January, 1791. No. 137 Center street. District bounded by North river through Spring street to Broadway, up Broadway to Fourteenth street, through Fourteenth street to and on First avenue to Allen and Pike streets to East river.—To provide gratuitous medical treatment and medicines to the sick and destitute poor, who are unable to pay for the same, at the dispensary and at their homes. Controlled by a board of trustees. Supported chiefly by voluntary contributions. Fifty thousand nine hundred and eighty-two patients treated last year. Frederic J. de Peyster, president, 7 East Forty-second street; R. G. Remsen, vice-president, 87 Fifth avenue; D. Magie, M. D., secretary, 32 West Forty-eighth street; W. E. Roosevelt, treasurer, 33 Wall street. Apply to the house surgeon at the dispensary week-days, except holidays, from 9 to 3 p. m. for medical attendance, and from 9 to 5 p. m. for medicines.

New York Homeopathic Medical College and Hospital. Eastern boulevard (Avenue A) and Sixty-third street. (See class VII, division 2.)

New York Hospital Dispensary. No. 11 West Fifteenth street. (See class VII, division 1.)

New York Post-Graduate Medical School and Hospital (and Babies' Wards). No. 226 East Twentieth street. (See class VII, division 1.)

Northeastern Dispensary in the City of New York. Incorporated February 18, 1862, under the general statute. No. 222 East Fifty-ninth street.—Provides and furnishes free medi-

NEW YORK CITY — (Continued).

cal and surgical aid and medicines, also dentistry, vaccinations and medical attendance in confinement to such sick, afflicted and indigent persons as are unable to procure the same. Over 22,000 patients treated last year. Controlled by a board of managers. Supported by private charity, subscriptions and bequests. Jno. H. Riker, president; Alex. Hadden, M. D., vice-president; Warren Schoonmaker, M. D., secretary; George Whitefield, treasurer. Apply to the house physicians daily from 9 a. m. to 5 p. m.; on Sundays and holidays from 9 to 10.30 a. m., for application for service of the visiting physician.

Northern Dispensary of the City of New York. Incorporated 1828. Amendatory acts, passed April 10, 1850; March 6, 1858; April 30, 1881. Opened in 1828 at Waverly place, corner Grove and Christopher streets. District bounded by West Twenty-third and Spring streets, between Broadway and the North river.—To relieve such sick poor, and indigent persons as are unable to procure medical aid. Fifteen thousand five hundred and forty-nine patients cared for last year. Controlled by a board of trustees. Supported by voluntary contributions. George Starr, president, 29 West Fifty-seventh street; John S. Dickson, first vice-president, 29 West Fifty-seventh street; Edward F. Brown, second vice-president G. H. Wyncoop, M. D., third vice-president, 7 West Sixteenth street; Charles E. Bogert, secretary, 59 Christopher street; A. G. Bogert, treasurer, 64 Bank street. Apply to the house surgeon at the dispensary, daily except Sundays, from 9 a. m. to 3 p. m. for medical attendance; and from 8 a. m. to 5 p. m. for medicines; Sundays from 9 to 10 a. m. for medicines only.

Northwestern Dispensary in the City of New York. Incorporated July 10, 1852, under the general statute. Opened in December, 1852. No. 403 West Thirty-sixth street, corner Ninth avenue.—To provide and furnish medicines, and medical and surgical aid to such sick and indigent persons, as are unable to procure the same, and who may reside in the city of

NEW YORK CITY — (Continued).

New York, in such parts west of Fifth avenue, as the managers may from time to time, in their by-laws designate; the district is bounded on the south by Twenty-third street, on the east by Fifth avenue, on the west by the Hudson, and on the north by Eightieth street. Thirty thousand eight hundred and forty-nine patients treated, 72,270 prescriptions were dispensed, and 9,363 patients visited at their homes last year. Controlled by a board of managers. Supported by private donations and appropriations made by the city. Amos Maynard Lyon, president, 137 West Forty-second street; William Douglass, first vice-president, 241 West Forty-eighth street; A. Stewart Black, second vice-president, 315 West One Hundred and Twelfth street; William B. Conklin, secretary, 249 West Fifty-fourth street; John Hardy, treasurer, 492 Tenth avenue; R. J. McGay, M. D., house physician, to whom apply at the dispensary from 9 a. m. to 3 p. m.

Presbyterian Hospital in the City of New York (The). Madison avenue and Seventieth street. (See class VII, division 1.)

Roosevelt Hospital. Ninth avenue, between Fifty-eighth and Fifty-ninth streets. (See class VII, division 1.)

St. Barnabas House of the "New York Protestant Episcopal Mission Society." No. 306 Mulberry street. Maintains a dispensary for the poor of the neighborhood. (See class III, division 1.)

St. Francis Hospital and Dispensary of "The Sisters of the Poor of St. Francis." Nos. 603 to 617 East Fifth street. (See class VII, division 1.)

St. Luke's Hospital. Fifth avenue and Fifty-fourth street. (See class VII, division 1.)

St. Vincent's Hospital of the City of New York. No. 153 West Eleventh street. (See class VII, division 1.)

Tompkins Square Homeopathic Dispensary. Incorporated April 22, 1874, under the general statute. Opened September, 1863. No. 261 East Fourth street.—To furnish and provide gratuitously, such medical and surgical advice and aid and medicines, as may be necessary and proper to the poor, or

NEW YORK CITY — (Continued).

those persons who may be unable to pay for the same. During 1891, 7,146 patients were treated, 24,438 prescriptions dispensed, and 6,684 visits were made at the homes of patients. A charge of ten to twenty-five cents for each prescription is made to those able to pay. Open daily, except Sundays, from 9 to 10 a. m. Controlled by a board of directors. Supported by an appropriation from the city and fees for medicines. Henry Fisher, president, 187 East Houston street; Edward P. Orrell, secretary, 9 Chambers street; H. R. Gade, treasurer, 76 Maiden Lane; John P. Ermentraut, M. D., medical director and manager, to whom apply during office hours.

Trinity Dispensary of Trinity Church Association. Not separately incorporated. Opened 1881. No. 209 Fulton street.— For the medical treatment of the sick poor of the district below Chambers street, who may apply daily, except Sundays, from 10 to 12 m. A uniform fee of twenty-five cents is charged for each visit, including the prescription to those able to pay. Three thousand and eighty-four patients were treated and 6,143 visits were made to the dispensary last year. Persons needing attendance at their homes must apply to the sisters at the Mission House. Controlled by the physician and assistant physician appointed by the association. Supported by voluntary contributions and small fees from patients. Rev. Morgan Dix, president, of the association; George M. Coit, treasurer; Nelson H. Henry, M. D., physician in charge, 14 East Tenth street, to whom apply as directed.

University Medical College Dispensary. The medical department of the University of the City of New York, incorporated ————. Organized in 1883. Nos. 410 to 416 East Twenty-sixth street.— The Dispensary, which has not a separate charter, provides gratuitous medical and surgical treatment with medicines to the sick poor; has also a department for diseases of the skin, for the free treatment of the poor suffering from cutaneous diseases. Over 20,000 patients cared for annually. Open from 10 a. m. to 4 p. m. Con-

NEW YORK CITY — (Continued).

trolled by a committee appointed by the council of the university. Supported by private contributions. V. M. Polk, M. D., chairman, 7 East Thirty-sixth street; George Woolsey, M. D., secretary, 49 East Thirtieth street; W. Gilman Thompson, M. D., treasurer, 49 East Thirtieth street. Apply to the physician in charge at the dispensary during office hours.

Vanderbilt Clinic of the College of Physicians and Surgeons in the City of New York. Not separately incorporated. Opened 1886. Corner Tenth avenue and Sixtieth street.—To furnish free medical and physical advice, surgical dressing and medicines to the sick poor unable to pay for the same, at the clinics daily from 10 a. m. to 4 p. m. Controlled by a board of managers. Supported by endowments. James W. McLane, M. D., president, 51 West Thirty-eighth street; George M. Tuttle, M. D., secretary, 49 West Thirty-eighth street; Frederick M. Vanderbilt, treasurer, 459 Fifth avenue; James R. Lathrop, superintendent.

West Side German Dispensary of the City of New York. Incorporated December 19, 1872, under the general statute. Amendatory acts passed April 16, chapter 231, Laws of 1873; and May 2, chapter 427, Laws of 1892. Opened October 1, 1872. No. 411 West Thirty-eighth street.—For gratuitous medical and surgical treatment to the worthy sick poor, irrespective of creed and nationality; a charge of ten cents for medicines and surgical dressings is made to those able to pay. No contagious cases are received. Over 4,700 patients cared for, and over 5,000 prescriptions dispensed last year. Controlled by a board of trustees. Supported by voluntary contributions and membership dues. P. W. Moeller, president, 336 West Twenty-ninth street; James Cahen, vice-president, 240 West Twenty-fourth street; Wm. Schlegel, secretary, 315 West Thirty-first street; B. Karsch, treasurer, 635 Eighth avenue; G. Schlegel, M. D., secretary of medical board and medical director, to whom apply at the dispensary daily, except Sundays and holidays, from 2 to 4 p. m.

Woodstock Hospital of the City of New York. No. 815 Union avenue, near Westchester avenue. (See class VII, division 1.)

PEEKSKILL — WESTCHESTER COUNTY.—Dispensary of the Helping Hand Association" (Hospital). (See class VII, division 1.)

ROCHESTER — MONROE COUNTY.—Provident Free Dispensary. No. 96 Front street. (No information has been received from this institution.)

Rochester City Hospital. (See class VII, division 1.)

Rochester Homeopathic Free Dispensary. No. 157 Monroe avenue. Reports being well under way. No further information received, but for which apply to E. J. Bissell, M. D., 75 South Fitzhugh street, from 10 a. m. to 2 p. m.

SCHENECTADY — SCHENECTADY COUNTY.—Hospital Association of the City of Schenectady. (See class VII, division 1.)

SYRACUSE — ONONDAGA COUNTY.—Dispensary of the College of Medicine of Syracuse University. Incorporated. Open every week-day at 3 p. m., for the gratuitous medical and surgical treatment of the sick poor. Taken from a directory, as no answer has been received from the officers.

Syracuse Free Dispensary. Incorporated July 17, 1888, under the general statute, with all amendments thereto. Opened in September, 1888. No. 208 Warren street.—To provide and furnish medical and surgical aid to such persons as may be in need thereof and who are unable, by reason of poverty, to procure the same, and for the more successful treatment and control of disease and the advancement of medical science. Only for all those poor persons who are able to apply personally at the dispensary. A nominal charge of ten cents is made for each prescription dispensed, unless the patient declares his inability to pay such charge. No house visits are made; 2,188 treatments were given last year. Controlled by a board of five trustees. Supported by voluntary contributions and subscriptions. W. L. Brown, president; Thomas Emory, vice-president; F. R. Hazard, secretary; Salem Hyde, treasurer, all of Syracuse. Apply to the physician in charge at the dispensary, week days, between 1 and 4 p. m.

SYRACUSE — (Continued).

Syracuse Homeopathic Free Dispensary. Incorporated May 24, 1892, under the general statute. Opened January 1, 1890. No. 213 East Genesee street.—To maintain in the city of Syracuse a homeopathic dispensary that shall be free to the worthy poor. For the gratuitous medical and surgical care and homeopathic treatment of the worthy poor of Syracuse. Last year 375 patients were treated and 1,850 prescriptions were dispensed. Controlled by a board of eleven trustees, eight of whom were physicians. Supported by voluntary contributions. J. W. Sheldon, M. D., president; S. L. G. Leggett, M. D., vice-president; J. H. Hallock, M. D., secretary and treasurer. Apply to any of the medical staff at the dispensary during office hours.

TROY — RENSSELAER COUNTY.—Troy Hospital Association. Eighth street. (See class VII, division 1.)

UTICA — ONEIDA COUNTY.—Utica City Dispensary. Incorporated October 6, 1870, under the general statute. Opened January 28, 1872. No. 28 Elizabeth street.—For the free medical and surgical relief of the sick poor, walking cases only. About 600 patients are treated annually. Controlled by a board of trustees. Supported by rents of the dispensary and outbuildings. Dr. J. H. Glass, president; E. D. Brandegee, vice-president; Dr. W. M. Gibson, secretary and physician in charge; Dr. Ira D. Hopkins, treasurer; Charles G. Ward, M. D. attending physician, to whom apply, from 12 to 1 p. m., at the dispensary.

St. Elizabeth's Hospital and Home. No. 172 Columbia street. (See class VII, division 1.)

YONKERS — WESTCHESTER COUNTY.—St. John's Riverside Hospital. No. 60 Woodworth avenue. (See class VII, division 1.)

St. Joseph's Hospital, Yonkers, N. Y. South Broadway. (See class VII, division 1.)

DIVISION 7.—SPECIAL DISPENSARIES. (Most of the General Dispensaries have also Special Departments.)

ALBANY—ALBANY COUNTY.—Albany Charitable Eye and Ear Infirmary of St. Peter's Hospital of the City of Albany. Broadway, corner North Ferry street. (See class VII, division 1.)

Albany Eye and Ear Infirmary. No. 117 Grand street. (No information whatever has been received from the officers.)

St. Peter's Hospital of the City of Albany. Broadway, corner of North Ferry street. (See class VII, division 1.)

BROOKLYN—KINGS COUNTY.—Brooklyn City Dispensary. No. 11 Tillary street. (See class VII, division 6.)

Brooklyn E. D. Dispensary and Hospital, Nos. 108 to 112 South Third street. (See class VII, division 1.)

Brooklyn E. D. Homeopathic Dispensary Association. No. 194 South Third street. (See class VII, division 6.)

Brooklyn Eye and Ear Hospital. No. 94 Livingston street. (See class VII, division 2.)

Brooklyn Hospital, Orthopedic Dispensary. Raymond street and De Kalb avenue. (See class VII, division 1.)

Brooklyn Nose, Throat and Lung Dispensary. No. 545 Fulton street. No information has been received concerning this institution.

Brooklyn Throat Hospital. (See class VII, division 2.)

Central Throat Hospital and Polyclinic Dispensary. Incorporated ————. Opened in 1890. Broadway, corner Siegel street. Unsectarian. Nine thousand six hundred and twenty-eight cases were treated last year. Clark D. Rhinehart, president; H. L. Armstrong, M. D., medical superintendent. (No answer was received from the officers.)

Chinese Hospital Association. No. 45 Hicks street. (See class VII, division 1.)

Long Island Throat and Lung Hospital and Peoples' Dispensary. Incorporated May 31, 1890, under the general statute. No. 1043 Gates avenue.—To furnish gratuitously medicine, surgi-

BROOKLYN — (Continued).

cal and medical treatment, and for the special treatment of diseases of the throat, nose, eye, ear and lungs, to the worthy sick poor, whose cases are curable. The work is but in its infancy as yet, and the hospital is not yet opened. One thousand six hundred patients received treatment for special diseases last year. Controlled by a board of directors. Supported by voluntary contributions. Thos. J. Kenna, president; F. J. Haggerty, first vice-president; Rev. J. Chadwick, D. D., second vice-president; D. Morris Woolley, M. D., secretary and surgeon-in-chief, 310 Sumner avenue; F. P. Sillers, treasurer, 457 Monroe street, all of Brooklyn. Open daily from 2 to 4 p. m., except legal holidays and Sundays. Apply to the surgeon-in-chief at 310 Sumner avenue, or at the dispensary.

BUFFALO — ERIE COUNTY.—Buffalo City Eye and Ear Dispensary is now changed to the "Buffalo Ophthalmic Hospital," No. 47 West Huron street, which see in this class, division 2.

Buffalo City Eye and Ear Dispensary. Incorporated. Formerly at No. 11 Genesee street, is discontinued.

Buffalo Eye and Ear Infirmary. 676 Michigan street.—For the free medical and surgical treatment of the eye and ear to the sick poor. (See class VII, division 2.)

Buffalo Medical and Surgical Dispensary. No. 203 Ellicott street. (See under class VII, division 6.)

Buffalo Ophthalmic Hospital. No. 47 West Huron street. (See class VII, division 2.)

Charity Eye, Ear and Throat Hospital of Erie County. Corner of Main and East Huron streets. (See class 7, division 2.)

Dental Infirmary Association, Fitch Institute. Organized in 1890. No. 159 Swan street. No information has been received.

East Side Eye, Ear and Throat Dispensary. Formerly at No. 572 Genesee street. Letter was returned unopened, marked "Not found."

BUFFALO -- (Continued).

United States Marine Hospital Service Dispensary. Room 25, Post-office Building. (See class II, division 3.)

NEW YORK CITY -- American Veterinary College, Dispensary Department. No. 139 West Fifty-fourth street. (See class VII, division 2.)

Dispensary of the New York College of Veterinary Surgeons, incorporated in 1857. No. 332 East Twenty-seventh street. — Gives free advice and treatment to sick and lame animals of poor persons, daily from 9 to 10 a. m.

Free Dispensary of the New York Polyclinic. Nos. 214 and 216 East Thirty-fourth street. (See class VII, division 1.)

German Poliklinik of the City of New York. No. 78 East Seventh street. (See class VII, division 1.)

Harlem Dispensary. No. 160 East One Hundred and Twenty-sixth street. (See class VII, division 6.)

Harlem Eye, Ear and Throat Infirmary. Incorporated January 3, 1882, under the general statute. Amendatory act filed February 11, 1884. No. 144 East One Hundred and Twenty-seventh street. — To establish, manage and conduct an institution, comprising a dispensary and hospital for the treatment of diseases of the eye, ear and throat, and auxiliary departments in connection therewith, for gratuitous treatment of patients unable to pay therefor, and to other patients for compensation; but all money so received, to be applied to the support of the institution, which is only conducted as a dispensary yet. One thousand five hundred and twenty-one patients treated last year. Controlled by a board of trustees. Supported by private and voluntary contributions. Josiah Lombard, president, 2064 Fifth avenue; J. J. Richards, vice-president, 276 West One Hundred and Twenty-fifth street; C. B. Meding, secretary, 132 West One Hundred and Twenty-sixth street; David Foster, treasurer, 211 West One Hundred and Twenty-fifth street. Apply to the attending surgeons at the infirmary, daily, except Sundays, from 2 to 3 p. m.

Isabella Heimath. Amsterdam avenue and One Hundred and Ninetieth street. (See class V, division 3.)

NEW YORK CITY — (Continued).

Manhattan Eye and Ear Hospital. No. 103 Park avenue, corner of Forty-first street. (See class VII, division 2.)

Metropolitan Throat Hospital. No. 351 West Thirty-fourth street. (See class VII, division 2.)

Mount Sinai Hospital. Lexington avenue, between Sixty-sixth and Sixty-seventh streets. (See class VII, division 1.)

New Amsterdam Eye and Ear Hospital. Incorporated April 4, 1888, under the general statute. Opened May, 1888. No. 212 West Thirty-eighth street.—For the establishment and maintenance of a free Hospital and Dispensary in the city of New York, for the professional care and treatment of persons afflicted with diseases of the eye and ear, nose and throat, and the establishment in connection therewith, of a School of Instruction in Ophthalmology and Otology. Free treatment for the worthy poor, but private patients are also received. The capacity of the hospital is very limited as yet, twenty-four beds. One thousand seven hundred and forty-seven patients treated last year, of which but sixty-seven were cared for in the hospital. No contagious cases or any other than those specified are received. Controlled by a board of trustees. Supported by voluntary contributions, donations, legacies, board of pay patients, and appropriations from the city. L. A. Jackson, president, 23 Park row; Frank Tilford, first vice-president, 656 Sixth avenue; J. Romain Brown, second vice-president, 59 West Thirty-third street; H. V. Parsell, treasurer, 31 East Thirty-first street; Thos. R. Pooley, M. D., secretary and physician in charge, 107 Madison avenue, to whom apply at the Dispensary, which is open daily, except Sundays, from 2 to 3.30 p. m.

New York Bacteriological Institute. Incorporated December, 1890, under the general statute. Maintains the "New York Pasteur Institute." Opened January 28, 1891, at No. 178 West Tenth street. Soon to remove to Central park and Eighth avenue, near Ninety-seventh street.—For the study and gratuitous treatment of contagious diseases, comprising a "Pasteur" Department and a "Koch" department, for

NEW YORK CITY — (Continued).

the treatment of hydrophobia and tuberculosis. Owing to the present limited quarters of the institute, gratuitous treatment only, without board is given to indigent patients, who have been bitten by rabid dogs, or dogs supposed to be mad. Over 300 beneficiaries last year. Controlled by a board of trustees. Supported principally by Dr. Gibier, also by a small fund, and by voluntary contributions. Paul Gibier, M. D., president; Louis C. Lepage, secretary, Rutherford, N. J.; E. Aug. Neresheimer, treasurer, 176 Lenox avenue. Apply to Dr. Gibier at 178 West Tenth street, from 7 a. m. to 7 p. m., or as soon as possible after being bitten.

New York College of Dentistry. Incorporated in 1865. No. 207 East Twenty-third street. Maintains an infirmary opened in 1866 for poor patients, for the treatment of the teeth. Open daily, except Sundays and holidays, from 9 to 12 a. m., and managed as a clinic for the students. Controlled by the college trustees. Supported by the college and small fees from patients able to pay. Alex. W. Stein, M. D., treasurer, 30 West Fifteenth street. J. A. Bradshaw, superintendent, to whom apply at the infirmary during office hours.

New York Eye and Ear Infirmary. Northeast corner of Second avenue and Thirteenth street. (See class VII, division 2.)

New York Homeopathic Medical College and Hospital. Eastern boulevard and Sixty-third street. (See class VII, division 2.)

New York Institute for Eye and Ear Diseases (with Departments of Nose and Throat). Incorporated April, 1890, under the general statute. Opened December 1, ————
———.— Maintains a free Dispensary for the charitable treatment of the poor afflicted with diseases of the eye, ear, nose and throat. At present the hospital has not free beds, but patients are charged board according to their ability to pay. Chronic and contagious cases are not admitted. One thousand one hundred beneficiaries last year. Controlled by a board of managers. Supported by voluntary contributions. J. L. Campbell, M. D., president, 259 West Forty-second street; W. C. Campbell, secretary, 259 West Forty-second

NEW YORK CITY — (Continued).

street; C. L. Patton, treasurer, 206 West Forty-second street; Charles A. Bucklin, M. D., resident and executive surgeon, to whom apply daily, from 1 to 2 p. m., at the dispensary.

New York Ophthalmic and Aural Institute. No. 46 East Twelfth street. (See class VII, division 2.)

New York Ophthalmic Hospital. Corner of Twenty-third street and Third avenue. (See class VII, division 2.)

New York Orthopedic Dispensary and Hospital. Nos. 126 and 128 East Fifty-ninth street. (See class VII, division 2.)

New York Pasteur Institute. (See under New York Bacteriological Institute, in this division.)

New York Post-Graduate Medical School and Hospital (and Babies' Wards). Nos. 226 East Twentieth street. (See class VII, division 1.)

New York Skin and Cancer Hospital. No. 243 East Thirty-fourth street; Branch Hospital, at Fordham Heights. (See class VII, division 2.)

New York Society for the Ruptured and Crippled. No. 135 East Forty-second street, corner Lexington avenue. (See class VII, division 2.)

New York Throat and Nose Infirmary. Not incorporated as yet. Opened March 3, 1892. No. 833 Third avenue.—For the maintenance of an infirmary in the city of New York for the gratuitous treatment of the poor, afflicted with diseases of the throat and nose and allied affections; and in connection therewith a School of Instruction in Laryngology and Phonology. The worthy poor who are unable to pay for special treatment are cared for irrespective of creed, color or nationality. During the first ten months, 249 persons were benefited. Controlled by a board of managers. Supported by voluntary contributions. Andrew Sluband, Jr., president, 80 Broadway; Newton T. Colby, secretary, 26 East Forty-second street; Edward J. Bermingham, M. D., executive surgeon, No. 7 West Forty-fifth street. Apply to the chief of the clinic at the infirmary daily, except holidays, from 2 to 3 p. m. and from 8 to 9 p. m.

NEW YORK CITY — (Continued).

St. Bartholomew's Hospital and Dispensary. Incorporated in 1888, under the general statute. No. 300 West Thirty-sixth street.—For the free treatment of the poor suffering from skin and venereal diseases, etc., and for efforts to prevent the spread of the above contagious diseases. Unsectarian. The Dispensary has suspended work at present.

United States Marine Hospital Service, U. S. Marine Dispensary. Office at the Battery. (See class II, division 3.)

University Medical College Dispensary. No. 410 East Twenty-sixth street. (See class VII, division 6.)

SYRACUSE — ONONDAGA COUNTY.—Syracuse Charitable Eye and Ear Infirmary. No. 312 Warren street. No information has been received from the officers.

DIVISION 8.—DIET KITCHENS, NURSING, VISITING AND RELIEVING SICK POOR IN THEIR HOMES, ALSO HOSPITAL ASSOCIATIONS, ETC.

ALBANY — ALBANY COUNTY.—Ladies' Christian Union Aid Society of the City of Albany. Incorporated in 1891, under the general statute. Organized in February, 1866.—To seek out the Protestant poor and needy of our city; to relieve their necessities and to surround them with Christian influences, especially the poor and worthy sick and aged. Ninety-five beneficiaries last year. Controlled by a board of managers. Supported by contributions from individual members of the churches. Mrs. Isaac Edwards, president, 73 Ten Broeck street; Miss Mary Gregory, secretary, Ten Broeck street; Mrs. B. J. Johnson, Clinton avenue, treasurer. Apply to any of the officers or managers, who investigate all cases.

AMSTERDAM — MONTGOMERY COUNTY.—Ladies' Hospital Aid Society. (See Amsterdam City Hospital, under Montgomery county, class VII, division 1.)

BROOKLYN — KINGS COUNTY.—Brooklyn Association for Improving the Condition of the Poor. No. 104 Livingston street. (See class III, division 1.)

BROOKLYN — (Continued).

Brooklyn Diet Dispensary. Incorporated March 5, 1877, under the general statute. Organized January, 1876. No. 21 De Kalb avenue. Branches, 883 Myrtle avenue, 289 Sackett street, 86 Dikeman street, 39 Sumpter street, 231 Lorimer street.—To prepare and supply gratuitously nourishing food for the destitute sick poor who are unable to care for themselves. Five thousand five hundred and forty beneficiaries last year. Controlled by a board of lady managers. Supported by voluntary contributions, subscriptions, city excise fund, and an appropriation by the State. Mrs. J. S. Plummer, president, 1276 Pacific street; Mrs. H. B. White, vice-president, 50 Willow street; Mrs. R. B. Fithian, recording secretary, 351 Tompkins avenue; Mrs. Geo. A. Allin, corresponding secretary, Blythebourne, L. I.; Mrs. Peter Bogert, treasurer, Bath Beach, L. I. Apply through any physician.

Brooklyn Flower and Fruit Charity. No. 195 Montague street. (See class IV, division 3.)

Brooklyn Hospital Training School for Nurses. De Kalb avenue and Raymond street. (See class VII, division 1.)

Central Homeopathic Dispensary. No. 39 Sumpter street. (See class VII, division 6.)

Hebrew Benevolent Association of Brooklyn, Eastern and Western Districts. E. D. office, 93 South Ninth street; W. D. office, ————. (See class III, division 1.)

Hospital Saturday and Sunday Association. Incorporated ————.—To interest the general public in hospitable charity. Wm. G. Low, president; Rev. C. Cuthbert Hall, secretary.

Red Cross Society of Brooklyn. Incorporated in 1888, under the general statute. No. 195 Montague street.—To teach ready methods rendering temporary aid to the sick and injured and to give instruction in home nursing, and the laws of health; this being accomplished through the medium of lectures delivered to pay and free classes. During last year forty-nine free classes were given instruction on "Emergency Cases, "Home Nursing and Hygiene," and "Hygiene of

BROOKLYN — (Continued).

Infancy and Childhood." District nursing has been recently undertaken by the society, with a view of making it permanent, if possible. The services of a trained nurse have been secured, whose duty it is to visit daily the sick poor in their homes, thereby aiding the physician in his work, as well as alleviating the suffering of the patient by her care. During the first year the nurse made 1,374 visits to the sick poor, teaching them the necessity of cleanliness and the laws of health, thus enabling them to avoid illness, as well as to care for their sick in the best way. Controlled by a board of managers. Supported by subscriptions, donations, pay classes, etc. H. Beekman Delatour, M. D., president, 867 Union street; Miss Emma C. Low, vice-president, 153 State street; Miss Clara A. Matthews, secretary, 169 Livingston street; Mrs. D. P. Darling, treasurer, 255 Washington street; Frank W. Shaw, M. D., medical director, 327 Greene avenue; H. Plympton, M. D., chief medical examiner, 291 Halsey street. Apply to the secretary by letter, or in person, at any time.

St. Phoebe's Mission. Incorporated April 24, 1884, under the general statute. Amendatory act passed October, ———— Laws of 1887. Opened February, 1882. DeKalb avenue, opposite Fort Green, Protestant Episcopal.—To minister to the temporal and spiritual necessities of the sick, destitute and afflicted in the counties of Kings, Queens and Suffolk, State of New York, especially the inmates of all hospitals, jails, penitentiaries and alms-houses, at Flatbush and Brooklyn, or to those who have been inmates of the public institutions. No one is excluded who is in need of help. Capacity of the mission, twenty-two. Average number of inmates, twelve. Last year, 5,940 families were assisted in and outside of the institution. Controlled by a board of twenty-one lady managers and by an advisory board of gentlemen. Supported by voluntary contributions. Miss Cornelia King, president, Jamaica, L. I.; Mrs. A. Augustus Low, vice-president, 156 Columbia Heights; Mrs. Mary McD. Dixon, recording secretary,

BROOKLYN — (Continued).

389 Union street; Miss Helen M. Hunter, corresponding secretary, 96 Pierrepont street; Miss C. E. Morgan, treasurer, 162 Columbia Heights. Apply in person or by letter to the associate in charge, or to the board of managers or officers.

BUFFALO — ERIE COUNTY.— Buffalo Deaconess' Home of the Methodist Episcopal Church. (See class V, division 2.)

District Nursing Association. Incorporated May 1, 1891, under the general statute. No. 65 Franklin street.—To furnish free nursing to the sick poor of the city of Buffalo, who can not afford to pay for a physician, and for medicines. Six hundred and fifteen persons cared for and 2,463 visits were made last year. Controlled by a board of trustees. Supported by annual subscriptions and donations. Miss Mary A. Lewis, president, 268 Ellenwood avenue;——, secretary; Mrs. Bernard Bartow, treasurer, 220 Franklin street. Apply to any of the officers by letter, or to the nurses at No. 65 Franklin street.

Women's Educational and Industrial Union of Buffalo. (See class III, division 2.)

NEW YORK CITY.—American Female Guardian Society and Home for the Friendless. No. 32 East Thirtieth street and 29 East Twenty-ninth street. (See class III, division 1.)

Children's Aid Society (The). United Charities' Building, Fourth avenue and Twenty-second street.—Sick Children's Mission, No. 287 East Broadway. (See class III, division 3.)

Demilt Dispensary. No. 401 Second avenue, corner of Twenty-third street. (See class VII, division 6.)

Five Points House of Industry. No. 155 Worth street. (See class III, division 5.)

French Benevolent Society of the city of New York. Nos. 320 and 322 West Thirty-fourth street. (See class III, division 8.)

German Ladies' Society for the Relief of Destitute Widows and Orphans and Sick Persons. (See class III, division 1.)

German Society of the City of New York. No. 13 Broadway. (See class III, division 8.)

NEW YORK CITY — (Continued).

Guardians of the Sisterhood of the Holy Communion. No. 328 Sixth avenue. (See class III, division 2.)

Guild for St. Barnabas for Nurses. Incorporated March 17, 1892, under the general statute. Held at the Church of the Holy Communion, Twentieth street and Sixth avenue.—To assist its members in realizing the greatness of their calling and in maintaining a high standard of Christian life and work; and by associating nurses together, and with them other women as friends to provide, under God's blessing, some of the comforts and power gained by such an association. Controlled by a board of eleven trustees.

Hebrew Sanitary Reform Society. (See class IV, division 1.)

Hospital Saturday and Sunday Association of New York City. Incorporated. Organized, 1880. Office of general agent, United Charities' Building, Fourth avenue and Twenty-second street.—To raise funds for hospital purposes; collects by contributions in the churches on hospital Sunday (the last Sunday in the year), and in synagogues upon the preceding Saturday, and by other means, a fund which is distributed among various hospitals, pro rata, to the number of patients treated free. The hospital must be unsectarian in its charity and have as many as twenty beds. Distributed about \$60,000 among thirty-three hospitals last year. George Macculloch Miller, president, 80 Broadway; Hyman Blum, vice-president, 123 Duane street; John T. Bussing, recording secretary, 24 Pine street; Rev. George S. Baker, D. D., corresponding secretary, St. Luke's Hospital; Charles Lanier, treasurer, 17 Nassau street; F. F. Cook, general agent, to whom apply.

Institution of Mercy. No. 1075 Madison avenue. (See class V, division 2.)

International Medical Missionary Society. (See list of Dispensaries, where application can be made, class VII, division 6.)

Ladies' Hebrew Lying-in Society. No. 128 Second avenue. (See class VII, division 5.)

Little Sisters of the Assumption, Nursing Sisters of the Poor in Their Own Homes. Incorporated January 2, 1892, under

NEW YORK CITY — (Continued).

the general statute. No. 312 East Fifteenth street. An order founded in France, in 1864, and established in New York, May, 1891.—For the attendance upon and nursing the sick in their own homes. The Little Sisters nurse the sick poor of every creed, color or nation, in their homes, day and night, without charge; and by doing the work of the home, and by taking care of the children, they endeavor to keep the family together, while nursing the sick member. Controlled by a board of five trustees. Supported entirely by voluntary contributions and donations of necessary articles for use in their charitable work. Mrs. Eugene Kelly, president; Mrs. Lindley H. Chapin, secretary; Miss Carola Livingston, treasurer. Apply to Sister Marie du Christ, Superior, at the residence of the Little Sisters of the Assumption, No. 312 East Fifteenth street.

Loan Relief Association. (See class IV, division 1.)

Midwifery Dispensary. No. 312 Broome street. Co-operates with the incorporated "Society of the Lying-in Hospital of the City of New York." (See class VII, division 5.)

Mission of the Immaculate Virgin for the Protection of Homeless and Destitute Children. Lafayette place, corner of Great Jones street. (See class V, division 2.)

Mount Sinai Hospital. Lexington avenue, between Sixty-sixth and Sixty-seventh streets. (See class VII, division 1.)

New York Asylum for Lying-in Women. No. 139 Second avenue. (See class VII, division 4.)

New York City Mission and Tract Society (Woman's Branch of the). Incorporated in 1866. Organized in 1822. United Charities Building, Fourth avenue and Twenty-second street.—To carry the Gospel of Christ to all homes, even the most degraded, in that part of the city, below Fourteenth street; to elevate in their homes the families, to reach the children, and to minister to the sick poor, by providing things needful for their recovery in their homes, or removing them to hospitals when necessary. Every case is investigated by one of the missionaries and, if found worthy, is assisted, at

NEW YORK CITY — (Continued).

the discretion of the superintendent and visitors, and irrespective of creed, color or nationality; but, primarily, this is not a relief society. During 1891, 7,417 visits were made by nurses of the society and 2,844 garments were given. Maintains also three day nurseries, open from 7 a. m. to 7 p. m., as follows: Jewell Day Nursery, 20 Macdougall street; Memorial Day Nursery, 275 East Broadway; Virginia Day Nursery, No. 632 Fifth street. Controlled by a board of managers. Supported by private contributions and church donations. Mrs. M. K. Jessup, first directress, 197 Madison avenue; Mrs. W. H. Osborn, second directress, 32 Park avenue; Mrs. R. M. Field, secretary, 139 East Forty-fifth street; Miss M. E. Mitchell, treasurer, 58 West Fifty-sixth street; Mrs. Lucy S. Bainbridge, superintendent, 104 Bible House, to whom apply, or to any of the missionaries or nurses.

New York Colored Mission. No. 135 West Thirtieth street. (See class III, division 1.)

New York Deaconess Home and Training School of the Methodist Episcopal Church. Incorporated ——— under the general statute. Organized in 1889. No. 241 West Fourteenth street.—To train Christian women for Christian Evangelistic work and nursing, at home and abroad; to furnish a home for Christians who have or are to become deaconesses. These deaconesses assist pastors in their church work; and they also care for, nurse and relieve the sick and poor in the tenement districts of New York. Applicants must be members of the Methodist Episcopal Church, in good health, and not under 20 or over 40 years of age. Capacity of home for twenty-five. Under the auspices of the New York City Church Extension and Missionary Society. Controlled by a board of direction. Supported by voluntary contributions. Rev. M. D'C. Crawford, D. D., president, 150 Fifth avenue; Rev. E. S. Tipple, Ph. D., secretary, 205 West One Hundred and Fifth street; Richard Lavery, treasurer, Mount Vernon, N. Y.; Miss Isabella A. Reeves, superintendent, to whom apply at the home.

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New York Diet Kitchen Association. Incorporated 1873, under the general statute. Maintains five kitchens, situated as follows: East Side Dispensary District, 269 Third avenue; Northwestern Dispensary District, northwest corner of Thirty-sixth street and Ninth avenue; New York Dispensary District, Centennial Kitchen, 137 Centre street; No. 4, No. 619 East Fifth street; Northeastern Dispensary District, 331 East Sixtieth street.—To furnish free to the destitute sick such articles of nourishment as beef tea, mutton broth, milk, rice and oatmeal, as shall be necessary for their restoration; the food is issued upon the written requisitions of house and visiting physicians of the dispensaries of the city. In special cases, the directress may procure the gratuitous service of physicians, other than those named, to whom shall be furnished blank orders, or in cases of great urgency, may herself make requisitions on the kitchen. Over 14,800 patients supplied with nourishing food last year. Controlled by a board of managers and a directress for each kitchen. Supported by subscriptions, voluntary contributions and legacies.

—————, president, —————; Mrs. George F. Baker and Mrs. Charles M. Raymond, vice-presidents; Mrs. George W. White, secretary, 20 Fifth avenue; Mrs. James D. Smillie, treasurer, 110 East Thirty-eighth street. Apply as above from 9 a. m. to 3 p. m.

New York Dorcas Society. Incorporated October, 1883, under the general statute. Auxiliary to the "New York Female Assistance Society" (which see in this division). Meetings are held every Friday in the consistory room of the Reformed Dutch Church, corner of Twenty-ninth street and Fifth avenue, from 10 a. m. to 1 p. m.—To make up articles of clothing for the sick poor of the city, which shall be given to the above-named parent society for distribution. Controlled by a board of managers. Supported by voluntary contributions. Mrs. Mary Van Wagenen, honorary directress; Mrs. W. R. Taylor, 321 Macon street, Brooklyn, and Mrs. Alex. Frear, of 359 West Thirty-fourth street, direct-

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- resses; Miss A. J. Pomeroy, secretary, 12 West Fiftieth street; Mrs. J. V. D. Card, treasurer, 248 West Seventy-third street.
- New York Female Assistance Society. Incorporated May 6, 1840, under the general statute. Organized in 1813. Has as its auxiliary society, "The New York Dorcas Society" (which see in this division). Meets alternate Fridays from November to March, inclusive, in the Reformed Collegiate Church, Twenty-ninth street and Fifth avenue.—For the relief of the worthy sick poor, without reference to color or nationality. Assistance is given in necessary articles, and never in money excepting when relief can not be otherwise effected. During the year 1891 1,106 garments, groceries costing \$1.046, and coal costing \$735 were given to needy families after investigation. Controlled by a board of officers and managers. Supported by subscriptions, donations and interest on bonds. Miss C. J. Pryer, first directress, 52 West Twenty-seventh street; Mrs. W. R. Taylor, second directress, 321 Macon street, Brooklyn; Mrs. Wm. Watson, third directress, 137 West One Hundred and Third street; Miss M. E. Ludlum, secretary, 49 East Third street; Mrs. C. J. Barrett, treasurer, 25 Park avenue. Apply in person at the church during the meetings, or by mail to any of the managers.
- New York Foundling Hospital. No. 175 East Sixty-eighth street. (See class V, division 2.)
- New York Infirmary for Women and Children. No. 5 Livingston place, Stuyvesant square. (See class VII, division 4.)
- New York Practical Aid Society. No. 327 West Thirty-sixth street. (See class III, division 1.)
- New York Tenement House Chapter of the International Order of the King's Daughters and Sons, incorporated in 1888, under the general statute, and name changed by order of Supreme Court in 1891. Headquarters of the chapter, No. 77 Madison street.—To visit, comfort and relieve the sick and needy of New York city. Its aim shall be, in co-operation with existing agencies, to secure adequate and permanent relief for worthy cases, and to make the poor self-supporting,

NEW YORK CITY — (Continued).

self-reliant and provident, and by every possible means to develop their spiritual life. The benefits are for those outside of the churches, missions, and other organizations, who upon investigation are found worthy of relief or assistance in various ways. Controlled by a board of managers. Supported by voluntary contributions and donations from individuals and the various circles of the order. Mrs. George H. McGrew, chairman, 145 East Twenty-first street; Jacob A. Riis, first vice-chairman, 301 Mulberry street; Miss Clara Field, corresponding secretary and treasurer, 115 East Fortieth street; Miss Anna Shepard, recording secretary, Flushing, L. I.; Miss Jennie M. Dewey, superintendent, to whom apply at any time at No. 77 Madison street.

New York Two Cent Diet Kitchen for the Relief of the Poor. Incorporated in 1891, under the general statute. No. 300 Avenue A.—To feed the unfortunate poor and indigent invalids, with wholesome food, at the nominal sum of two cents per meal. Controlled by a board of directors. Supported by voluntary contributions and donations, etc. James R. Angel, president, 1274 Franklin avenue; Edw. H. Colell, secretary, northwest corner Fifth avenue and Eighteenth street; Charles W. Lawrence, treasurer, 261 Canal street. Apply to the general managers, daily, from 6 a. m. to 6.30 p. m., and Sundays from 7 to 10 a. m. and 12 to 2 p. m.

Night Medical Service of the Health Department. Organized in 1880.—Lists of medical men, who have registered for the service, are kept at each police station-house, where application can be made. An officer will call the registered physician living nearest the applicant. Fees are paid by the health department, 301 Mott street, when not collectible from the applicant. (See class II, division 2.)

St. John the Baptist Foundation. Mother House, No. 233 East Seventeenth street. (See class III, division 3.)

Sanitarium for Hebrew Children in the City of New York. Office, 124 East Fourteenth street. (See class VII, division 8.)

NEW YORK CITY — (Continued).

Shut-In Society. Incorporated August 12, 1885, under the general statute. Organized in 1884. One hundred and forty-six East Fifty-second street.—For the encouragement and comfort of invalids, and the printing and distributing of publications adapted to such work. It is not an almsgiving society, but one composed of invalids and of associates who are in health, designed for social cheer and spiritual comfort, and to relieve the weariness of the sick-room by correspondence and acts of kindness among its members. Publishes a monthly periodical "The Open Window;" has a library and supplies wheel-chairs. Numbers over 2,000 invalids and 900 associates. Controlled by a board of fifteen trustees. Supported by voluntary contributions. Mrs. R. R. Proudfit, president; Mrs. H. E. Munroe, secretary and treasurer, Ashland, Mass.

Sisterhood of the Good Shepherd. No. 419 West Nineteenth street. (See class V, division 2.)

Sisters of Bon Secours. Incorporated December 19, 1883, under general statute. Residence, Eighty-first street and Lexington avenue.—To nurse and care for the sick and poor, in their own homes, irrespective of religion or nationality. There are about sixty sisters in the Community. Controlled by a president and board of trustees. Supported by voluntary contributions. Officers, Sisters Amalia Peluffo, Marie Foulon, Cecile Lamotte, Louise Karcher and Louise Medery. Apply to Sister Eulalie de Barcelona, president, and Sister Superior, as above.

Sisters of the Annunciation of the Blessed Virgin Mary (The). Incorporated February 3, 1893.—For the care and relief of the sick and needy and the fallen, the education of the young, and all other works of mercy and charity for both bodily and spiritual relief incidental to and connected with the before-mentioned objects, which shall be executed and carried (so far as may be practicable) by and through the personal and gratuitous labors and efforts of Christian women, communicants of that branch of the Holy Catholic Church,

NEW YORK CITY — (Continued).

known in the United States as the Protestant Episcopal Church, wholly devoting themselves thereto, associated under the name of "The Sisters of the Annunciation of the Blessed Virgin Mary." Controlled by a board of managers, viz.: Mannsell Van Ransselaer, Fannie Elizabeth Hunter, Violante Sperling, Elizabeth Wayne Plume, Josephine Constance and Celeste Lawrence.

Sisters of the Stranger. No. 4 Winthrop place, Mercer street. (See class III, division 1.)

Society of the Lying-in Hospital of the City of New York. (See class VII, division 5.)

Spanish American Benevolent Society. No. 349 West Forty-sixth street. (See class III, division 8.)

United Hebrew Charities of the City of New York. No. 128 Second avenue. (See class III, division 1.)

United Relief Works of the Society of Ethical Culture. No. 109 West Fifty-fourth street. (See class III, division 3.)

ROCHESTER — MONROE COUNTY.—Rochester Female Charitable Society (The). Incorporated April 3, 1855, under the general statute. Organized in February, 1822. Meets monthly in the guild-room of St. Luke's church.—For the relief of worthy poor and indigent persons and families, in cases of sickness and suffering, who can not afford nurses when ill, or procure the comforts and necessities for the sick-room. About 500 beneficiaries assisted last year. Controlled by a board of trustees and lady managers, comprising eighteen directresses, visitors, collectors and honorary directresses. Supported by voluntary contributions. Mrs. Oscar Craig, president, 33 South Washington street; Mrs. Adolphus Morse, first vice-president, 15 Arnold park; Mrs W. C. Rowley, second vice-president, 146 Plymouth avenue; Mrs. Geo. C. Clarkson, third vice-president, 256 Alexander street; Mrs. Arthur Robinson, secretary, 67 South Washington street; Mrs. H. P. Brewster, treasurer, 86 Troup street; Mrs. Henry R. Selden, assistant treasurer, 42 Gibbs street. Apply to any of the officers or visitors. (N. B. The City Hospital grew directly

ROCHESTER — (Continued).

from this society, and many other societies owe indirectly their origin to it.)

Hebrew Ladies' Aid Society. (See class III, division 1.)

Rochester Hebrew Benevolent Society. (See class III, division 1.)

STAPLETON — RICHMOND COUNTY.—Staten Island Diet Kitchen. Incorporated June 21, 1882, under the general statute. Opened January 9, 1882. Corner of Grand and Van Duzer streets.—For the relief of the destitute sick of the county of Richmond, by the preparation and distribution of nourishing food and otherwise, given gratuitously upon the written requisition of the attending physician, to whom shall be issued blank orders for that purpose. One patient's requisition for one week is seven requisitions, or one for each day, and two articles only are issued at a time. Last year there were 187 beneficiaries and 2,786 requisitions filled. Controlled by a board of lady managers and an advisory board of gentlemen. Supported by annual subscriptions and donations. Mrs. W. W. McFarland, founder and president emeritus; Mrs. Francis McDonald, president; Mrs. G. J. Greenfield, vice-president; Mrs. F. U. Johnston, secretary; Mrs. T. J. Thompson, treasurer; Mrs. L. H. Meyer, bookkeeper. Apply at the kitchen with an order of the physician's requisition, daily, from 11 a. m. to 1 p. m.

TARRYTOWN — WESTCHESTER COUNTY.—Provident Association of Tarrytown. (See class I.)

DIVISION 9.—EXCURSIONS AND CONVALESCENT HOMES FOR SICK CHILDREN.

BATH BEACH — KINGS COUNTY.—Seaside Home of Children's Aid Society of New York. (See class III, division 3.)

BROOKLYN — KINGS COUNTY.—Brooklyn Children's Aid Society. General offices, No. 61 Poplar street. (See class III, division 3.)

CONEY ISLAND — KINGS COUNTY.— Health Home of the Children's Aid Society of New York. West end. (See class III, division 3.)

FAR ROCKAWAY — SUFFOLK COUNTY.—Convalescent Home of St. Mary's Hospital for Children of New York. (See class VII, division 4.)

NEW DORP (Cedar Grove), RICHMOND COUNTY (S. I.).— St. John's Guild, Seaside Hospital, which see under New York city, in this division.

NEW YORK CITY.— Babies' Hospital of the City of New York. No. 659 Lexington avenue, corner of Fifty-fifth street. (See class VII, division 4.)

Bartholdi Creche (The). Office of the Charity Organization Society of the City of New York, United Charities Building, 105 East Twenty-second street. (See class III, division 7.)

Children's Aid Society (The).— Maintains the Health Home at Coney island for mothers with sick children. (See class III, division 3.)

New York Infirmary for Women and Children. No. 5 Livingston place, Stuyvesant square. (See class VII, division 4.)

Order of Brothers of Nazareth. All Saints' Convalescent Home for Men and Boys, and the De Peyster Home for Consumptive Boys. (See under Verbank, Dutchess county, class VII, division 2.)

St. John's Guild. Incorporated December 14, 1877, under the general statute. Organized October 19, 1867. Office, No. 501 Fifth avenue, Room I. This entirely non-sectarian organization, for the relief of the sick children of the poor of the city of New York, without regard to creed, color, or nationality, maintains "The Floating Hospital," on which, during the summer months 1,000, or more sick children and mothers are taken daily on its trips into the lower bay, provided with medical attendance, good food and salt-water baths, and receive all the benefits of the sea air. During the summer of 1891, 29,731 children and mothers were thus cared for; also

NEW YORK CITY — (Continued).

"The Seaside Hospital" at Cedar Grove, New Dorp, S. I., accommodating 250 patients, in which are received the dangerously sick patients (children) or those requiring lengthened treatment, and where they are kept under careful nursing as long as necessary; all benefits are absolutely free, no discrimination whatsoever is made, actual suffering and need being the only requisites. Number of inmates during the summer of 1891, 1,067 who made an average stay of seven days. The Guild has recently opened "The Children's Hospital" at No. 157 West Sixty-first street, exclusively for sick and injured children only of the poor, who are received and treated free without distinction of color, nationality or creed. No children suffering from contagious or infectious diseases are admitted to any department of the Guild's institutions. The Guild conducts its work in co-operation with the Health Department, dispensaries and charitable institutions of every kind of this city and is under the constant personal supervision of the board of twenty-five trustees who control the society. Supported entirely by voluntary contributions. Chas. A. Leale, M. D., president; Wm. Brookfield, first vice-president; James E. Chandler, second vice-president; John P. Faure, secretary; W. L. Strong, treasurer; C. Rockland Tyng, general agent, to whom apply at No. 501 Fifth avenue, or at the various dispensaries, or for admission to the hospital, apply at No. 157 West Sixty-first street from 1 to 2 p. m.

St. Mary's Free Hospital for Children. No. 405 West Thirty-fourth street. (See class VII, division 4.)

Sanitarium for Hebrew Children in the City of New York. Incorporated October 31, 1879, under the general statute. Secretary's office, No. 124 East Fourteenth street. Sanitarium at Rockaway park, Rockaway Beach, L. I.—To give free excursions, on land or water, during the summer months, to poor sick and destitute Hebrew children, and to provide a sanitarium for the benefit of poor sick children of Jewish faith and persuasion; to supply medical aid, advice, medicines and assistance, and to care for such children. No contagious

NEW YORK CITY — (Continued).

cases received. Capacity of sanitarium for seventy-five. Fifteen thousand children were taken on free excursions, and about 36,000 meals were supplied last year. Controlled by a board of trustees. Supported by voluntary contributions. Nathan Lewis, president, 60 Broadway; Dr. Horatio Gomez, vice-president, 152 West One Hundred and Twenty-third street; Hezekiah Kohn, treasurer, 124 East Fourteenth street; Joseph Davis, secretary, 124 East Fourteenth street, to whom apply.

Tribune Fresh-air Fund. "Tribune Building." (See class III, division 7.)

ROCHESTER — MONROE COUNTY.—Rochester Infants' Summer Hospital of Ontario Beach. (P. O. Rochester.) Located half a mile west of Genesee river, near the shore of Lake Ontario. Opened in July, 1876.—For the care of infants of the poor and rich alike, afflicted with cholera infantum only, during the heated term, between July first and September first. Capacity for sixteen, which can be increased by adding tents. Over sixty-three beneficiaries last year. Controlled by a board of managers. Supported by voluntary contributions. Arthur S. Hamilton, president; Henry E. Ball, treasurer; Dr. E. M. Moore, physician in charge. Apply to any physician who will give an order certifying that the child has cholera infantum.

ROCKAWAY — SUFFOLK COUNTY.—Sanitarium for Hebrew Children.

DIVISION 10. — TRAINING SCHOOLS FOR AND FURNISHING NURSES.

BROOKLYN — KINGS COUNTY.—Brooklyn Homeopathic Hospital. No. 105 Cumberland street. (See class VII, division 1.) Brooklyn Homeopathic Maternity. Nos. 44 to 48 Concord street. (See class VII, division 4.)

Brooklyn Hospital Training School for Nurses. Incorporated 1881, under the general statute. Opened November, 1881.

BROOKLYN — (Continued).

DeKalb avenue and Raymond street.—To educate women to care for the sick and who nurse such charity cases as require assistance in illness. Capacity for and average number of pupils, thirty-two. Seven charity cases last year received 365 days of care and nursing. Controlled by a board of managers. Supported by annual subscriptions and a fund received from nursing among the sick. Mrs. Seth Low, president; Mrs. Alexander Forman, vice-president; Miss M. I. Merritt, superintendent, to whom application should be made at the school.

Long Island College Hospital of the City of Brooklyn. Henry street, near Pacific. (See class VII, division 1.)

Memorial Hospital Training School for Nurses. No. 200 South Oxford street. (See class VII, division 4.)

Methodist Episcopal Hospital in the City of Brooklyn (The). Sixth street and Seventh avenue. (See class VII, division 1.)

New York State School for Training Nurses of the "Brooklyn Homeopathic Maternity." No. 46 Concord street. (See class VII, division 4.)

BUFFALO — ERIE COUNTY.—Buffalo Homeopathic Hospital Training School for Nurses. No. 51 Twelfth street. (See class VII, division 1.)

Fitch Training School of the Charity Organization of the City of Buffalo. No. 159 Swan street. (See class I.)

NEW YORK CITY.—Babies' Hospital of the City of New York. No. 659 Lexington avenue, corner of Fifty-fifth street. (See class VII, division 4.)

German Hospital and Dispensary in the City of New York. Park avenue and Seventy-seventh street. (See class VII, division 1.)

Hahnemann Hospital of the City of New York. Park avenue and Sixty-seventh street. (See class VII, division 1.)

Men's Training School for Nurses, foot of East Twenty-sixth street, is a training school for male nurses named under

NEW YORK CITY — (Continued).

Bellevue Hospital of the Department of Public Charities and Correction. (Class II, division 2.) Apply to the superintendent at the Mills' School Building, at the hospital. (See class VII, division 1.)

Mount Sinai Hospital. Lexington avenue, between Sixty-sixth and Sixty-seventh street. (See class VII, division 1.)

New York Infirmary for Women and Children. No. 5 Livingston place, Stuyvesant square. (See class VII, division 1.)

New York Post-Graduate Medical School and Hospital (and Babies' Wards). No. 226 East Twentieth street. (See class VII, division 1.)

New York Training for Nurses (attached to Bellevue Hospital). Incorporated by special act, February 5, 1874. Organized 1873. No. 426 East Twenty-sixth street.—For the selection, education, training and providing of suitable persons as nurses for the sick. Average number of pupils, sixty-two. Unsectarian. Maintains a registry where applications are received for students and graduates. Also, "Edith Summer Home," Bell Island, South Norwalk, Conn., donated by O. H. Northcote to the board of managers, in memory to his wife. Controlled by a board of managers. Supported by voluntary contributions, fees for nurses services, registry fees, etc. Mrs. Wm. Preston Griffen, president, 208 East Fifteenth street; Mrs. Wm. H. Osborn, vice-president, 32 Park avenue; Mrs. Theodore Cuyler, secretary, 214 Madison avenue; George Montague, treasurer, Second National Bank. Apply to Miss Agnes S. Brennan, superintendent, at the school.

Practical Training School for Children's Nurses of "The Babies' Hospital of the City of New York." No. 659 Lexington avenue, corner Fifty-fifth street. (See class VII, division 4.)

Presbyterian Hospital in the City of New York (The). Madison avenue and Seventieth street. (See class VII, division 1.)

St. Andrew's Free Infirmary for Women. No. 108 East One Hundred and Twenty-eighth street. (See class VII, division 4.)

NEW YORK CITY — (Continued).

St. Luke's Hospital. Fifth avenue and Fifty-fourth street. (See class VII, division 1.)

Society of the New York Hospital. No. 8 West Sixteenth street. (See class VII, division 1.)

C L A S S V I I I .

CORRECTION, PENAL, PREVENTIVE AND REFORMATORY INSTITUTIONS.

[The Charity Organization Societies (see page 1-14) seek to obtain, from the proper sources, suitable and adequate relief of the kinds named in the following divisions, or to direct thereto.]

DIVISION I.—JAILS.

ALBANY COUNTY.—Albany.

ALLEGANY COUNTY.—Angelica.

BROOME COUNTY.—Binghamton.

CATTARAUGUS COUNTY.—Little Valley.

CAYUGA COUNTY.—Auburn (also State Prison).

CHAUTAUQUA COUNTY.—Mayville.

CHEMUNG COUNTY.—Elmira (also State prison and reformatory).

CHENANGO COUNTY.—Norwich.

CLINTON COUNTY.—Plattsburgh.

COLUMBIA COUNTY.—Hudson.

CORTLAND COUNTY.—Cortland.

DELAWARE COUNTY.—Delhi.

DUTCHESS COUNTY.—Poughkeepsie.

ERIE COUNTY.—Buffalo.

ESSEX COUNTY.—Elizabethtown.

FRANKLIN COUNTY.—Malone.

FULTON COUNTY.—Johnstown.

GENESEE COUNTY.—Batavia.

GREENE COUNTY.—Catskill.

HAMILTON COUNTY.—Sageville.

HERKIMER COUNTY.—Herkimer.

JEFFERSON COUNTY.—Watertown.

KINGS COUNTY.—Brooklyn.

LEWIS COUNTY.—Lowville.

LIVINGSTON COUNTY.—Geneseo.

MADISON COUNTY.—Morrisville.

MONROE COUNTY.—Rochester.

MONTGOMERY COUNTY.—Fonda.

NEW YORK COUNTY.—New York city:

First district.—The Tombs, corner Centre and Franklin streets.

Second district.—Jefferson market, 125 Sixth avenue.

Third district.—Essex market, 69 Essex street.

Fourth district.—One hundred and fifty-one East Fifty-seventh street.

Fifth district.—Harlem, 123 East One Hundred and Twenty-fifth street.

Sixth district.—East One Hundred and Fifty-eighth street, corner North Third avenue.

NIAGARA COUNTY.—Lockport.

ONEIDA COUNTY.—Rome.

ONEIDA COUNTY.—Rome.

ONONDAGA COUNTY.—Syracuse.

ONTARIO COUNTY.—Canandaigua.

ORANGE COUNTY.—Goshen.

ORLEANS COUNTY.—Albion.

OSWEGO COUNTY.—Oswego.

OTSEGO COUNTY.—Cooperstown.

PUTNAM COUNTY.—Carmel.

QUEENS COUNTY.—Long Island City.

RENSSELAER COUNTY.—Troy.
RICHMOND COUNTY.—Richmond.
ROCKLAND COUNTY.—New City.
ST. LAWRENCE COUNTY.—Canton.
SARATOGA COUNTY.—Ballston.
SCHENECTADY COUNTY.—Schenectady.
SCHOHARIE COUNTY.—Schoharie.
SCHUYLER COUNTY.—Watkins.
SENECA COUNTY.—Waterloo.
STEUBEN COUNTY.—Bath.
SUFFOLK COUNTY.—Riverhead.
SULLIVAN COUNTY.—Monticello.
TIOGA COUNTY.—Owego.
TOMPKINS COUNTY.—Ithaca.
ULSTER COUNTY.—Kingston.
WARREN COUNTY.—Lake George.
WASHINGTON COUNTY.—Salem.
WAYNE COUNTY.—Lyons.
WESTCHESTER COUNTY.—White Plains.
WYOMING COUNTY.—Warsaw.
YATES COUNTY.—Penn Yan.

DIVISION 2.—PRISONS.

AUBURN — CAYUGA COUNTY.—State Prison. Corner of Wall street. Located in 1816. Convicts first received in 1817. Capacity for 1,308. Charles F. Durston, agent and warden; Wm. H. Boyle, principal keeper.

DANNEMORA — CLINTON COUNTY.—Clinton State Prison.

ELMIRA — CHEMUNG COUNTY.—State Reformatory. See p. 19.

NEW YORK CITY.—City Prisons, for persons awaiting trial, and for those sentenced to the prisons for short terms for minor crimes. Located as follows:

First district, the Tombs, corner Centre and Franklin streets.

Second district, Jefferson Market, 125 Sixth avenue.

Third district, Essex Market, 69 Essex street.

Fourth district, 151 East Fifty-seventh street.

Fifth district, Harlem, 123 East One Hundred and Twenty-fifth street.

Sixth district, East One Hundred and Fifty-eighth street, corner Third avenue. (See class II, division 2.)

SING SING — WESTCHESTER COUNTY.—State Prison.

DIVISION 3.—PENITENTIARIES AND WORKHOUSES.

ALBANY — ALBANY COUNTY.—Penitentiary.

AUBURN — CAYUGA COUNTY.—The State Asylum for Insane Criminals, formerly at Auburn, is now removed to Matteawan, Dutchess county. (See class II, division 1.)

BROOKLYN — KINGS COUNTY.—Kings County Penitentiary. Carroll street and Nostrand avenue.

BUFFALO — ERIE COUNTY.—Erie County Penitentiary. Corner of Pennsylvania and Fifth streets.—For the reformation and detention of convicts, not younger than 16 years. Daily average of prisoners, 416.

MATTEAWAN — DUTCHESS COUNTY (P. O. Fishkill Landing).—State Asylum for Insane Criminals, formerly at Auburn, Cayuga county. (See class II, division 1.)

NEW YORK CITY (Blackwell's island).—Penitentiary of the Department of Public Charities and Correction.—For the reception and employment of persons, both male and female,

NEW YORK CITY — (Continued).

convicted of drunkenness, disorderly conduct and minor crimes, for terms of thirty days and upward. Receives, also, felons, for whom the State pays board. Louis D. Pillsbury, Warden. (See class II, division 2.)

Workhouse of the Department of Public Charities and Correction (Blackwell's island).—For able-bodied and destitute adults, and persons sentenced in the police courts for misdemeanors, vagrancy, disorderly conduct, etc., who are usually committed for ten days to six months. There is one for each sex. For voluntary commitment, apply to William Blake, superintendent of outdoor poor, 129 East Eleventh street, from 8 a. m. to 5 p. m. (See, also, class II, division 2.)

Branch Workhouse, of the Department of Public Charities and Correction (Hart's island).—Receives the excess from the workhouse on Blackwell's island. No commitments are made direct to it. (See class VIII, division 7.)

Branch Penitentiary, of the Department of Public Charities and Correction (Randall's island).—For prisoners detailed from the main penitentiary for labor on Randall's island. (See class II, division 2.)

ROCHESTER — MONROE COUNTY.—Monroe County Penitentiary. South avenue.

SYRACUSE — ONONDAGA COUNTY.—Onondaga County Penitentiary. Lodi street.

DIVISION 4.—REFORMATORIES FOR MEN.

BROOKLYN — KINGS COUNTY.—Home of Industry. No. 201 Livingston street.—To furnish a home for discharged convicts, and to help them find employment. Maintains a farm at Smithdown, L. I., to give employment. During the first nine months 106 were given a home and employment.

FORT HAMILTON — KINGS COUNTY.—Inebriates' Home for Kings county. Incorporated under the general statute,

FORT HAMILTON — (Continued).

1866. Special acts, May 9, chapter 843, Laws of 1867. Amendatory acts, chapter 483, Laws of 1868; chapter 514, Laws of 1871; chapter 687, Laws of 1872; chapter 797, Laws of 1873; chapter 627, Laws of 1875; chapter 169, Laws of 1877. Opened October, 1867.—A hospital for the care and treatment of male inebriates (alcoholic and opium), either on their voluntary application, or when committed by due process of law, for such period as the executive committee may deem for his benefit, not exceeding six months. Patients are carefully classified. Only Kings county patients are admitted free, but boarding patients are received from New York and other localities, at rates from ten dollars to forty dollars a week. Persons suffering from chronic affections, or other diseases, other than immediately produced by inebriety are excluded. Capacity for 225 inmates; average number, 188. Six hundred and seventeen patients were treated last year. Controlled by a board of trustees and by a medical superintendent. Supported by board of pay patients and a percentage of the excise money of Kings county. George G. Herman, president; F. S. Massey, vice-president; S. A. Avila, secretary, 9 Court street, Boerum place, Brooklyn; C. Ferguson, treasurer. J. A. Blanchard, M. D., medical superintendent, to whom apply P. O. box 42, Fort Hamilton, L. I., or to the secretary at his office.

MATTEAWAN (P. O. Fishkill-on-the-Hudson) — **DUTCHESS COUNTY**.—State Asylum for Insane Criminals. (See class II, division 1.)

NEW YORK CITY.—Home of Industry and Refuge for Discharged Convicts. Incorporated February 17, 1882, under the general statute. Opened in January, 1872. No. 224 West Sixty-third street, near Amsterdam avenue.—To aid and encourage destitute and depraved men, and especially to provide a refuge and temporary employment for discharged convicts, and men who having led criminal lives are sin-

NEW YORK CITY — (Continued).

cerely willing to reform. Meals and lodgings are also given to the same class outside the homes. Capacity for 150. Average number of inmates, thirty-six. One hundred and five beneficiaries last year. Controlled by a board of trustees. Supported by voluntary contributions and by sales of brooms and brushes made in the factory attached to the home. J. H. Boswell, president and treasurer, Greenwich, Conn.; Wm. R. Bliss, secretary, Short Hills, N. J.; Charles Stewart, superintendent, to whom apply any day before 10 p. m., at the home 224 West Sixty-third street.

New York Christian Home for Intemperate Men. Incorporated October 19, 1877, under the general statute. Amendatory acts passed June eighteenth, chapter 546, Laws of 1881; chapter 523, Laws of 1888. Opened in June, 1877. No. 1175 Madison avenue.—For the physical, mental and spiritual improvement of intemperate men; to provide and maintain for them a suitable home in the city of New York, and to endeavor, by Christian care and influences, to reform and reclaim them. Intemperate men, inebriates and those addicted to the use of opium, who desire to permanently reform and become Christians, are received in the home for not less than five weeks; by special act of the Legislature such men may be committed to the home by the courts. The home is free to those unable to pay; board for others from eight dollars to twenty-five dollars a week, payable in advance. Capacity for sixty-five, two-thirds of whom are usually maintained gratuitously. Average number of inmates, forty-five. Controlled by a board of directors. Supported by board paid by inmates and by voluntary contributions. Rev. Dr. Stuart Dodge, president, 225 Madison avenue; J. Noble Stearns, vice-president, 10 West Fifty-eighth street; Henry C. Houghton, M. D., secretary, 7 West Thirty-ninth street; Joel E. Fisher, treasurer, Buckingham Hotel; Charles A. Bunting, resident manager, 1175 Madison avenue, to whom apply personally or by mail, at the home, at any time. There exists among the former members of the home the "Christian Home Helping

NEW YORK CITY—(Continued).

Brotherhood and Free-bed System." Organized December 25, 1888. Its aim and object is that every one charitably disposed may have an opportunity of helping a fallen brother. Fifteen dollars provides a free bed for a poor man for five weeks. Charles A. Bunting, treasurer, 1175 Madison avenue.

TROY—RENSSELAER COUNTY.—House of Industry.

DIVISION 5.—REFORMATORIES FOR WOMEN.

ALBANY—ALBANY COUNTY.—House of Shelter. Incorporated January 4, 1869, under the general statute. Opened March, 1868. Howard, corner Wendell streets.—A reformatory for fallen, homeless and erring girls and women, who are anxious to lead a better life. Capacity for thirty. Average number of inmates, twenty. One hundred and thirty-nine beneficiaries last year. Controlled by a board of lady managers. Supported by the public, by invested funds, and by appropriations from the county. A. S. Kibbie, president, 8 First street; S. S. Hall, treasurer, corner State and Pearl streets. Apply to the matron at the home at any time.

House of the Good Shepherd. Incorporated ————. Opened in ————. Central avenue.—To afford a retreat for females who have had the misfortune to fall into crime and who wish to reform. Maintains also the "St. Ann's School of Industry," under the supervision of the State Board of Charities. For the correction and education of homeless and wayward children. Number of girls, twenty-six. Under the charge of the Sisters of the Good Shepherd. Mother Mary Francis de Sales, superior, to whom apply at any time.—Taken from the Catholic directory, as no answer has been received from the institution.

ALBION—ORLEANS COUNTY.—Western House of Refuge for Women. (See class II, division 1.)

BROOKLYN—KINGS COUNTY.[Helping Hand of Brooklyn. Incorporated July 17, 1871, under the general statute. Opened February, 1890. No. 136 Lawrence street.—Maintains a home for preventative and rescue work, especially for young, friendless and needy girls under 25 years of age. Also conducts a night mission for both sexes, and a dispensary, open week days from 2 to 3 p. m., for the sick poor. Capacity of the home, twenty-five. Average number of inmates, fifteen. Controlled by a board of trustees. Supported by voluntary contributions. James W. Elwell, president, 70 Lefferts place; Asa W. Parker, first vice-president, 149 Henry street; G. L. LeLacheur, M. D., second vice-president, 64 Montague street; Mrs. F. B. Cobb, secretary, 38 Schermerhorn street; Miss M. L. Barber, treasurer, 18 Remsen street. Apply to the matron, Mrs. F. M. Howell, 136 Lawrence street, or to any of the trustees.

House of the Good Shepherd. Incorporated December 23, 1868, under the general statute. Opened December 15, 1868. Hopkinson avenue and Pacific street.—For the preservation and reformation of women and girls from 16 to 35 years of age, who have led or are likely to lead a depraved life, but no insane, disabled or incorrigible person is admitted. Capacity for 600. Four hundred and fifty were received last year. Controlled by the Sisters of Our Lady of Charity of the Good Shepherd, who live in the convent adjoining the institution. Supported by the industry of the sisters and inmates, by voluntary contributions and by appropriations from the board of supervisors. Apply to the superior at the institution at any time.

Wayside Home. Incorporated May 28, 1880, under the general statute. Opened March, 1880, at 352 Bridge street.—To improve the condition of homeless women, especially those who have been discharged from prison, by providing them with employment and instruction in a temporary home, where they shall be surrounded by elevating and refining influences and ultimately to procure for them suitable homes and occupations. No contagious or hospital patients received, or

BROOKLYN — (Continued).

such as abuse the privileges of the home. Unsectarian. Capacity for forty. Average number of inmates, thirty-six. About 350 beneficiaries last year. Controlled by a board of managers. Supported by work of inmates and by voluntary contributions. Mrs. Emma F. Pettingill, president 262 Hicks street; Mrs. Anna C. Field, first vice-president, 158 Hicks street; Mrs. S. T. Willetts, second vice-president, 28 Lefferts place; Mrs. Jonathan Wright, recording secretary, 78 Remsen street; Mrs. A. P. Chase, corresponding secretary, 57 Clifton place; Mrs. E. P. Sessions, treasurer, 141 Amity street. Apply to the reception committee through the matron at any time.

BUFFALO — ERIE COUNTY.—Asylum of Our Lady of Refuge.

Incorporated January 14, 1856, under the general statute. Known also as the Magdalen Asylum. Opened in July, 1855. No. 485 Best street.—For benevolent and charitable purposes; to reclaim women who have fallen from virtue, to preserve female youth from impending ruin, and to take care of exposed female orphans. Maintains also the Catholic Protectory for Girls, at the same address. Capacity for 165. Average number of inmates, 147. Controlled by the Sisters of Our Lady of Refuge and by a superior. Supported by the labor of inmates, by the county, and by gifts and voluntary contributions. Mother Mary Agnes Kelly, president, 485 Best street, to whom apply.

Ingleside Home for Reclaiming the Erring. Incorporated October 22, 1869, under the general statute. Opened in May, 1869. Harvard place.—To provide for erring women or those exposed to temptation a pleasant home, where they may be led back to the right path or fitted for lives of usefulness, and who, by their need of help, penitence and obedience to the rules of the institution, show a willingness to reform, or to be rescued. None received who should be cared for by other societies, or who come as a matter of convenience. Maintains now a Hospital Ward for women. Capacity for fifty. Average number of inmates, twenty-seven. Controlled by a board of managers. Supported by voluntary contributions, work of

BUFFALO — (Continued).

inmates, produce of land, orders from the county superintendent of the poor and commitments from police justices. ————, president; Mrs. W. A. Wilkes, first vice-president, 305 Linwood avenue; Mrs. R. Chamberlain, corresponding secretary, 339 Fargo avenue; Mrs. Charles Walbridge, recording secretary, 142 Cottage street; Mrs. H. H. Otis, treasurer, 928 Delaware avenue. Apply to the managers or to the matron, at the institution, at any time.

Magdalen Asylum. Incorporated as "The Asylum of Our Lady of Refuge," No. 485 Best street, which see in this division.

St. Mary's Lying-in Hospital. No. 126 Edward street. (See class VII, division 4.)

ELMIRA — CHEMUNG COUNTY.—The Anchorage. Incorporated by special act, April ninth, chapter 227, Laws of 1891. Organized and opened April, 1890. No. 955 College avenue.—To provide a home or homes for friendless girls and women, under 30 years of age, who have fallen, or who are in circumstances that may lead to their fall, from want of employment, from destitution, or from evil associates, or who may voluntarily commit themselves to the care of the home and conform to its rules and regulations. They shall receive proper instruction in common English branches and training in housework, sewing and other useful occupations, with a view of their being restored to their friends or placed in virtuous homes. Capacity for twenty-five. Average number of inmates, ten. During last year sixteen girls were received and cared for. Controlled by a board of trustees. Supported by voluntary contributions, work of inmates, and, under the act of 1892, the board of inmates committed is paid by the counties from which they came. Mrs. Helen L. Bullock, president; Mrs. Julie E. Smith and Mrs. M. P. Luqueer, vice-presidents; Francis E. Baldwin, secretary; Miss Elizabeth M. Coke, treasurer, all of Elmira. Apply to the reception committee, Mrs. O. C. Dounce, of West Church street, Mrs. J. E. Smith, of 723

ELMIRA — (Continued).

West First street, and Mrs. C. A. Hall, of College avenue, at any time.

HUDSON — COLUMBIA COUNTY.—House of Refuge at Hudson, N. Y. (See class II, division 1.)

NEW YORK CITY.—Association for Befriending Children and Young Girls. Nos. 136 and 138 Second avenue. (See class III, division 5.)

Door of Hope. Incorporated February 28, 1893, under the general statute. No. 102 East Sixty-first street, corner Park avenue.—For the purpose of maintaining a christian home where young girls leading lives of prostitution or having been led astray from the path of virtue, who desire to reform, will be ever lovingly welcomed and sheltered while being trained to occupy suitable positions of honorable usefulness. The home to be free and no charge is to be made for those who avail themselves of its protection. Controlled by a board of managers. Supported by voluntary contributions. Mrs. E. M. Whittemore, founder and president, 723 Park avenue; Mrs. Annie E. Mortimer, of 31 West Thirty-fourth street; Mrs. Florence V. C. Bishop, of 13 Madison avenue; Mrs. Margaret L. Simpson, 335 West Forty-fifth street, and Mrs. aSrah Lardenberger, 250 West Forty-fourth street. Apply to the matron at the home at any time.

Florence Crittenton Mission. Incorporated April 3, 1893, under the general statutes. Opened April, 1892, at Nos. 21 and 23 Bleecker street.—To aid and encourage destitute, homeless and depraved women and men to seek reformation of character and respectability of life through the influence of the religion of Christ, and to reach positions of honorable self-support, and especially to provide temporary homes and employment for women and young girls who having led profligate lives or having been betrayed from the path of virtue are sincerely willing to reform, until they can be restored to friends or established in home industry, and also to establish a christian home for working girls, and for these purposes to provide and carry on such homes, industrial enterprises, religious ser-

NEW YORK CITY — (Continued).

vices and other instrumentalities as may be adapted thereto. Maintains already a home at the above address for the salvation and reformation of fallen women, and holds gospel services every evening from 9 to 12 o'clock for all who choose to attend, with special reference to bringing in the lost, degraded and homeless men and women from the streets and places of evil resort. The home accommodates fifty inmates. Average number, forty. Controlled by the founder, Charles N. Crittenton, and a board of trustees. Supported by the founder mainly and by voluntary contributions. A. S. Hatch, Edward Sketchley, James W. Pierce and F. B. Waterman, advisory committee. James R. Johnston, superintendent; Mrs. A. L. Prindle, matron. Apply at the mission as above.

Home for Fallen and Friendless Girls (Wetmore Home). Incorporated February 8, 1873, under the general statute. Opened in 1866. Nos. 49 and 50 South Washington square.—For the reclaiming, educating and Christianizing girls and young women from 14 to 25 years of age, who have been led astray, or who are homeless or unable to earn a living, and who show their need and willingness to reform, by voluntarily committing themselves and conforming to the rules and regulations of the home. Such persons receive instruction in common English branches, skilled housework, plain sewing, laundry work, and, later, good positions are found for them, or they are returned to friends. Temporary shelter is also given in cases of special need to destitute mothers and their infants. Capacity for fifty to sixty. Average number of inmates, fifty. Maintains a laundry and also a sewing-room where domestic articles are made and kept on sale. Controlled by a board of managers. Supported by voluntary contributions interest of funds and work of inmates. Z. Stiles Ely, president, 26 West Twenty-sixth street; Geo. C. Wetmore, secretary, 10 East Eleventh street; B. F. Manierre, treasurer, 26 West Twenty-fourth street. Apply to the matron at the home at any time.

NEW YORK CITY — (Continued).

House of Mercy, New York (Protestant Episcopal). Incorporated February, 1855, under the general statute. Amendatory act passed May 7, chapter 699, Laws of 1869. Founded in 1854; opened in 1855. Now at Two Hundred and Sixth street, Inwood-on-the-Hudson (Hudson River railroad); formerly at Eighty-sixth street and North river.—To establish and manage an asylum or asylums for the reception and reformation of destitute and fallen women, who may wish to avoid or abandon a vicious course of life, or who may be committed to said asylum for reformation by the magistrates of the city of New York; and also to procure, or erect and maintain, within the city of New York, a house of reception, where such females may be received and temporarily accommodated. The House of Mercy is arranged in three departments, each of which is distinct in its character, thereby furthering the objects of the institution and realizing greater results. The St. Agnes' House, forming the south wing (capacity for eighty), is equipped with every accommodation for, and devoted entirely to the moral and industrial education and training of young girls from 8 to 16 years of age, who have been rescued from danger, and can be placed there by benevolent societies, churches, or by individuals, and is distinct from the rest of the work. The House of Mercy also maintains "St. Saviour's Sanitarium" (incorporated in 1891), for the care and cure of inebriate women, both voluntary and committal patients. Capacity of the House of Mercy for 154 inmates. Average number, 115. Controlled by a board of fifteen trustees and a board of three managers, acting under the board of trustees. Supported by voluntary contributions, legacies, work of inmates, and appropriations from the city funds for committed inmates. Under the charge of the Sisters of St. Mary. Charles N. Kent, secretary, 10 Spruce street; Elihu Chauncey, treasurer, 22 East Twenty-second street; and Lyman Rhoades, 120 Broadway, managers. Rev. Wm. O. Embury, chaplain. Apply to any of the police justices, the officers of, and the Sisters at the institution.

NEW YORK CITY — (Continued).

House of the Good Shepherd (Roman Catholic). Incorporated November 1, 1858, under the general statute. Amendatory act, chapter 410, Laws of 1882. Opened January 12, 1858. Foot of Ninetieth street and East river.—For the reformation of inebriates and fallen women, who wish to reform their lives by deserting the haunts of vice (except confirmed invalids); the care of those who may be in danger of falling and of girls committed by city magistrates. Young women from any part of the country are received without regard to creed or nationality, and no one is detained against her own will. Capacity for 1,042. Average number of inmates, 695. Controlled by and in charge of the Sisters of the Good Shepherd. Supported by the county, and by the united labor of the Sisters and inmates. Apply to the Sister Superior at any hour of the day, at the house.

Isaac T. Hopper Home. No. 110 Second avenue. (See "Women's Prison Association and Home," in this division.)

Margaret Strachan Home for Fallen Women. Incorporated in 1887, under the general statute. Nos. 103 and 105 West Twenty-seventh street. (Formerly the Faith Home.)—A mission for the rescue of abandoned men and women by evening religious services; also gives temporary shelter to fallen women anxious to reform, who remain two months or longer until employment is found for them. Accommodates forty women. Transportation to their friends is furnished in certain cases. Controlled by a board of managers. Supported by voluntary contributions. Over 350 were cared for last year. Mrs. M. Bottome, president; Mrs. E. Livingston Lynch, secretary, 109 East Thirty-first street; Mrs. Russell Stebbins, Jr., treasurer, 958 Madison avenue; Miss M. Sibthorpe, superintendent, to whom apply at the home.

Midnight Mission. Incorporated in 1868, under the general statute. No. 208 West Forty-sixth street. Formerly at 260 Greene street.—For the reclamation of fallen women. After sufficient probation, should a girl remain, a place is found for her in the country. Controlled by a board of trustees, which

NEW YORK CITY — (Continued).

also maintains the "St. Michael's Home," which see in his class and division. Supported by voluntary contributions. Number of inmates last year, 156, and temporary shelter was given to 179. In charge of the Sisters of St. John the Baptist. John Davenport, president, 218 West Thirty-eighth street; R. S. Holt, secretary, 57 Water street; Louis Mesier, treasurer, 1 Pine street. Apply to the Sisters at the mission at any time.

New York Foundling Hospital. No. 175 East Sixty-eighth street. (See class V, division 2.)

New York Infant Asylum. Sixty-first street and Amsterdam avenue. (See class V, division 2.)

New York Magdalen Benevolent Society. Incorporated November 18, 1851, under the general statute. Organized, and the asylum opened, in 1833. Eighty-eighth street, between Fifth and Madison avenues. To remove soon to the foot of One Hundred and Thirty-ninth street and North river.—"For the promotion of moral purity in the city of New York, in a way both preventive and corrective, by contributing to the support of a competent and respectable agent, who shall be an authorized minister of some evangelical church, by rendering assistance to females who manifest signs of penitence and a desire to return to the paths of virtue from which they have swerved; by furnishing an asylum or home for such females, and procuring respectable employment for their future support, and by diffusing such information concerning the objects of the association as time and circumstances may seem to justify;" and to this end, the society maintains an asylum for the reclamation and religious improvement of fallen women, who remain during good behavior, and employment is procured for their future support. Present capacity, eighty; to be increased to over 100 in the new building, now in course of erection. Controlled by a board of managers. Supported by subscriptions, work of inmates and interest on legacies and investments. —————, first directress; Mrs. George De W. Thornton, second directress, 88 Madison avenue;

NEW YORK CITY — (Continued).

Mrs. A. A. Redfield, secretary, "The Ariston," Fifty-fifth street and Broadway; Edward Schell, treasurer, Manhattan Savings Institute; Mrs. Charles Fanning, Assistant treasurer, 15 West Fiftieth street; Mrs. Burr, senior matron, to whom apply at the home, at any time of day or night.

New York Mothers' Home of the Sisters of Misericorde. No. 531 East Eighth-sixth street. (See class VII, division 4.)

Riverside Rest Association. No. 310 East Twenty-sixth street. (See class III, division 6.)

St. John the Baptist Foundation. Mother house, No. 233 East Seventeenth street. (See class III, division 3.)

St. Michael's Home, incorporated under the same charter as the Midnight Mission of New York, is situated at Mamaroneck, Westchester county (which see in this class and division). This institution partakes of the nature of a reformatory industrial boarding school, without payments, and is intended chiefly for young girls of a higher social and moral level than those in the Midnight Mission. Capacity for fifty-eight. Last year there were sixty-one inmates. Controlled by the St. Michael's Ladies' Association and a board of trustees. Supported by voluntary contributions and by public funds. In charge of the Sisters of St. John the Baptist. Mrs. Francis H. Weeks, president, 11 East Twenty-fourth street; Mrs. Stuyvesant F. Morris, vice-president, 16 East Thirtieth street; Mrs. William V. Chapin, secretary and treasurer, 20 East Forty-fifth street. Apply to the Sister Superior at the home.

St. Saviour's Sanitarium of the House of Mercy, New York (P. E.). Two hundred and Sixth street, Inwood-on-the-Hudson. (See House of Mercy, in this division.)

St. Zita's Home for Friendless Women of the City of New York. Incorporated May 12, 1893, under the general statute.—To reclaim, encourage and provide employment for women, who have been discharged from prison, the "House of the Good Shepherd" and other institutions, and uphold them to persevere in leading good lives. The principal house of said society shall be and is located in the city of New York. Controlled

NEW YORK CITY — (Continued).

by a board of seven trustees, viz.: Ellen O'Keeffe, Rosalie Calhoun Tone, Mary H. Bouvies, Anais C. Bliss, Georgiana Iselin, Hugh J. Grant and Francis D. Dowley.

Sisters of the Annunciation of the Blessed Virgin Mary. (See class VII, division 8.)

Wetmore Home. No. 49 South Washington square. (See Home for Fallen and Friendless Girls, in this division.)

Women's Prison Association and Home (The). Incorporated May 20, 1854, under general statute. The home was opened in 1845. No. 110 Second avenue.—For the improvement of the condition of female prisoners, whether detained on trial, or finally convicted, or as witnesses; for the support and encouragement of reformed female convicts, after their discharge, by affording them an opportunity of obtaining an honest livelihood, and sustaining them in their efforts to reform. The "Isaac T. Hopper Home," accommodates from thirty to forty. Average number of inmates, thirty. Over 191 beneficiaries last year. Controlled by an executive committee. Supported by donations, subscriptions, work of inmates and income from investments. First directress, —————; Mrs. Frederick Billings, second directress, 279 Madison avenue; Mrs. A. M. Powell, corresponding secretary, Plainfield, N. J.; Mrs. Wm. Emerson, Jr., recording secretary, 55 West Forty-seventh street; Mrs. Wilson M. Powell, treasurer; 324 West Fifty-eighth street. Apply to the matron at the home at any time.

SPARKILL — ROCKLAND COUNTY.—Dominican Convent of Our Lady of the Rosary, St. Agnes' Convent. (See under New York Children's Homes, class V, division 2.)

SYRACUSE — ONONDAGA COUNTY.—St. Joseph's Maternity and Foundling Asylum of Syracuse. Name now changed to "St. Ann's Maternity and Foundling Asylum of Syracuse." Corner of Tuttle and Carbon streets. (See class VII, division 4.)

SYRACUSE — (Continued).

Shelter for Homeless Women. Incorporated May 24, 1878, under the general statute. Amendatory act, chapter 278, Laws of 1881. Amended May 19, 1887. The institution was opened in 1877. Roberts avenue, corner of Grant avenue.— To provide temporary employment and protection for homeless women, discharged female prisoners and vagrant or neglected girls, the latter class of which, whether committed or surrendered, or who may enter voluntarily, are expected to remain under the control of the trustees until they are 19 years of age, and are instructed in all branches of industrial work. Capacity for thirty-five. Average number of inmates, thirty. Twenty-eight beneficiaries last year. Controlled by a board of trustees. Supported by voluntary subscriptions, board and work of the inmates. Rt. Rev. F. D. Huntington, D. D., president, Walnut place; Mrs. N. F. Belknap, secretary, 601 Onondaga street; Miss Arria S. Huntington, treasurer, Walnut place. Apply to the treasurer, or to the matron at the "Shelter."

TROY — RENSSELAER COUNTY.— Helping Hand Mission and Galilean House for Women. Organized in 1889. No. 123 River, corner Ferry street, Troy. Coffee-house and Lodging for Men and Boys, corner of Ferry and Front streets.— To elevate helpless humanity and teach the gospel and loving ministrations, save the lost and comfort and help the needy. The shelter for women is arranged for the accommodation of unfortunate women and girls who are furnished free of charge with a comfortable home, food and clothing, if necessary and surround with such influences, help and encouragement as will lead them to live pure and useful lives. The coffee-house and lodging, with capacity for fifty, for men and boys, provides a good, clean, comfortable bed at a charge of ten cents each for a night's lodging and food at a very small cost. Seventy-three women and girls, also seventeen children and infants were sheltered in 1892.. Supported by voluntary contributions. H. S. McLeod, treasurer, 81 Grand street. Apply to Mr. and

TROY — (Continued).

Mrs. Frank Knickerbocker, superintendents, at the Mission, 123 River street at any time.

Mount Magdalen School of Industry and Reformatory of the Good Shepherd. Incorporated in 1884, under the general statute, as the "Roman Catholic House of the Good Shepherd." Reincorporated with large powers under the present title, October 24, 1887. Opened June 18, 1884. People's avenue.—To maintain a reformatory for fallen women and reckless girls, and a place of protection for homeless girls, who are in danger of being contaminated by evil surroundings; if of age, they must come voluntarily and agree to remain one year; if minors, they must be sent by parental or civil authority. No pregnant women, or those infected with disease, are admitted. Capacity for 150. Average number of inmates, 136. Controlled by a board of directors chosen from among the Sisters of the Good Shepherd. Supported by voluntary contributions, labor of inmates and by county appropriations. Apply to Mother M. Immaculata, superior, at the house, in person, at any time.

DIVISION 6.—REFORMATORIES FOR CHILDREN.

ALBANY — ALBANY COUNTY.—St. Ann's School of Industry of the House of the Good Shepherd. Central avenue, corner of Boulevard.—For the correction and education of homeless and wayward children, committed by the authorities. (See class VIII, division 5.)

BROOKLYN — KINGS COUNTY.—Roman Catholic Orphan Asylum Society in the City of Brooklyn, in the County of Kings. No. 42 Court street, St. John's Protectory. (See class V, division 2.)

Truant Home for Boys, Jamaica avenue, opposite Enfield street. Established in 1853. A reformatory for truant children committed by magistrates. About 303 inmates last year. Patrick H. Corrigan, superintendent.

BUFFALO — ERIE COUNTY.— Catholic Protectory for Girls of the Asylum of Our Lady of Refuge,* 485 Best street. (See class VIII, division 5.)

St. John's Protectory is incorporated under the "Society for the Protection of Destitute Catholic Children" (West Seneca P. O.)—which see under Homes for Children, class V, division 2.

CANAAN FOUR CORNERS — COLUMBIA COUNTY.— Burnham Industrial Farm. Incorporated by special act, chapter 332, Laws of 1886. Building opened January, 1887. General office, 135 East Fifteenth street. A non-sectarian, national institution.—To save truant, unruly and vagrant boys irrespective of race or locality, by religious, educational and industrial training in farm and mechanical work, except such as have been in penal institutions, or have chronic or organic disease, or who are deficient in intellect. Boys between 7 and 16 years of age from New York city, are received on commitment by courts with consent of trustees, or surrender by parents, and by transfer from other custodial institutions, and must be bound to the trustees until 21 years of age; practically boys are rarely kept beyond 18 years. Capacity for seventy-five. Average number of inmates, fifty-three. Last year, forty-five were wholly or partially cared for. Under the personal charge of a Protestant brotherhood. Controlled by a board of trustees, acting through the executive committee. Supported by voluntary subscriptions and the board of such boys as have friends who can pay for them. F. G. Burnham, vice-president, 12 Nassau street, New York city; Mrs. James F. Maury, secretary, Morristown, N. J.; Robert Carter, treasurer, Morristown, N. J.; William M. F. Round, corresponding secretary and director, to whom apply at 135 East Fifteenth street, New York city, from 9 a. m. to 5 p. m.

ELMIRA — CHEMUNG COUNTY.—New York State Reformatory. (See class II, division 1.)

HICKSVILLE — QUEENS COUNTY.— St. John's Protectory of the Roman Catholic Orphan Asylum Society in the city of Brooklyn, etc., which see under Brooklyn Homes, class V, division 2.)

NEW YORK CITY.— Association for Befriending Children and Young Girls. Nos. 136 and 138 Second avenue.— (See class III, division 5.)

Burnham Industrial Farm. (See Canaan Four Corners, Columbia county, in this division.)

Door of Hope. 102 East Sixty-first street (See class VIII, division 5.)

Hebrew Sheltering Guardian Society of New York (Orphan Asylum). Incorporated June 11, 1879, under the general statute. Amendatory act passed, chapter 328, Laws of 1892. Maintains an asylum at Grand Drive, Eleventh avenue and One Hundred and Fifty-first street.— For infants and grown-up boys, and an asylum, corner of Boulevard and One Hundred and Fiftieth street (formerly at Eighty-seventh street and Avenue A), for girls.— Receives Jewish infants, orphans, half orphans and deserted children, who are not admitted in any other Jewish institution, and those who are intrusted to its care by parents or relatives, or are committed by any magistrate; gives them religious, secular and industrial training, and at a suitable age adopts them into families, or places them in self-supporting positions; also gives temporary employment, food and shelter to former inmates when needful, and furnishes meals to poor persons and children not committed to the institution. Children must be free from disease and not under 2 years of age. Capacity for 679. Average number of inmates, 545. Controlled by a board of managers. Supported by voluntary contributions and appropriations made by the city. Mrs. Philip J. Joachimsen, president, 61 East Seventy-fifth street; Mrs. D. S. Telled, vice-president, 979 Lexington avenue; W. Myer, secretary, 2069 Madison avenue; Mrs. A. Barnett, treasurer, 785 Madison avenue; Mr. and Mrs. L. Fauerbach, superintendents, through whom apply for admission to

NEW YORK CITY — (Continued).

the president at the asylum at One Hundred and Fifty-first street.

House of Mercy, New York (Protestant Episcopal). Two Hundred and Sixth street, Inwood-on-the-Hudson. (See class VIII, division 5.)

Ladies' Deborah Nursery and Child's Protectory. No. 95 East Broadway. (See class V, division 2.)

New York Catholic Protectory. Incorporated by special act, chapter 448, Laws of 1863, as "The Society for the Protection of Destitute Roman Catholic Children in the City of New York," Name was changed to present title by act, chapter 83, Laws of 1871. Other amendatory acts, chapters 401 and 405, Laws of 1864; chapters 641 and 646, Laws of 1865; chapters 647 and 774, Laws of 1866; chapters 428 and 751, Laws of 1867; chapter 817, Laws of 1868; chapter 857, Laws of 1869; chapter 704, Laws of 1870; chapter 83, Laws of 1871; chapter 218, Laws of 1875; and others. The institution was opened May 1, 1863; male and female departments at Westchester, Westchester county; Offices and Houses of Reception, Nos. 415 and 417 Broome street, New York.—For the protection of destitute and the reformation of delinquent Roman Catholic children of the city of New York, committed to its care under the provisions of its charter and amendments thereto, viz.: First. Children under 14 years of age intrusted for protection and reformation, by instrument in writing of parents or guardians. Second. Those between 7 and 14 years of age, committed as idle, truant, vicious or homeless, by any magistrate in the city of New York, empowered by law to make committal of such children. Third. Those of a like age, who are transferred by the Department of Public Charities and Correction. Children who are physically and mentally deficient and the totally depraved, are not admitted. The Brothers of the Christian schools have charge of the protectory for boys, who are given a common school and business education, combined with industrial and manual training. The Sisters of Charity have charge of the Protectory for girls,

NEW YORK CITY — (Continued).

who are educated and receive industrial, domestic and business training. Children are also adopted, placed, or at a suitable age, indentured into good families in the country. Capacity for 2,600. Average number of inmates, 2,255. Last year over 3,120 children were cared for. Controlled by a board of managers. Supported by per capita allowance from the city, by voluntary contributions, and by labor of inmates. ————, president, ————; Bryan Lawrence, and P. Breslin, vice-presidents; Wm. J. Fanning, secretary, Sinclair House; Eugene Kelly, treasurer, 33 West Fifty-first street; Brother Leontine, rector of male department; Sister M. Anita, superioress, female department; John J. Rodrigue, actuary and manager of house of Reception and Salesroom, 415 Broome street, to whom apply from 9 a. m. to 5 p. m.

New York Juvenile Asylum. Incorporated by special act, June 30, 1851. Amendatory acts, chapter 547, Laws of 1853; chapter 387, Laws of 1854; chapter 57, Laws of 1856; chapter 43, Laws of 1858; chapter 245, Laws of 1866; chapter 173, Laws of 1875. Opened in 1853. Amsterdam (Tenth) avenue and One Hundred and Seventy-sixth street. House of Reception, No. 106 West Twenty-seventh street.—To receive and take charge of such children, between the ages of 7 and 14 years, as may be voluntarily intrusted to them by their parents or guardians, or committed to their charge by competent authority, and to provide for their support, and to afford them the means of moral, intellectual and industrial education. A reformatory for truant and disobedient children of both sexes, residents of the city, committed by a magistrate or surrendered by parents or guardians. Homes in the country are also provided for destitute, homeless, friendless or surrendered children. Capacity for 1,000 in the asylum, and from fifty to seventy in the house of reception. Average number of inmates in the former, 985; in the latter, twenty-seven. Controlled by a board of directors. Supported by per capita allowance from the city, public school fund, legacies

NEW YORK CITY — (Continued).

and donations. Ezra M. Kingsley, president; Peter Carrier, secretary; Henry Talmadge, treasurer; E. Carpenter, superintendent. Apply to any police magistrate, or at the house of reception during any hour of the day.

Order of Brothers of Nazareth. (See under Verbank, Dutchess county, class VII, division 2.)

St. James' Home. No. 21 Oliver street. (See class V, division 2.)

Sisters of the Annunciation of the Blessed Virgin Mary. (See class VII, division 8.)

Society for the Reformation of Juvenile Delinquents in the City of New York (House of Refuge). Incorporated by special act, chapter 126, Laws of 1824. Amendatory acts, chapter 24, Laws of 1826; chapter 181, Laws of 1830; chapter 144, Laws of 1833; chapter 241, Laws of 1860; chapter 172, Laws of 1865 and others. The "House of Refuge" was opened in January, 1825, on Randall's island, twelfth ward of the city of New York (ferry at the foot of East One Hundred and Twentieth street).—A reformatory for children under 16 years of age, complained of and convicted of crime, vagrancy, or disorderly conduct, who are given a common school education and industrial instruction. Receives only upon commitment of police magistrates and courts of law in New York city or Hudson river counties (first three judicial districts). Children under 12 years of age can not be committed except on conviction for felony. Capacity for 1,000. About 968 children last year. Controlled by a board of thirty managers. Supported by State and city appropriations. John A. Weekes, president, 47 East Twentieth street; E. Jansen Wendell, secretary, 8 East Thirty-eighth street; Henry Dudley, treasurer, 56 West Fifty-seventh street. Address all communications to the House of Refuge, Randall's island, N. Y. (Station "L").

ROCHESTER — MONROE COUNTY.—Industrial School of Rochester. (See class III, division 3.)

ROCHESTER — (Continued).

State Industrial School. Phelps avenue. (See class II, division 2.)

TROY — RENSSELAER COUNTY.—Helping Hand Mission.
(Class VIII, division 5.)

UTICA — ONEIDA COUNTY.—St. Vincent's Industrial School (or Protectorate). Incorporated April 7, 1886, under the general statute. Opened March, 1862.—To maintain and support an industrial school and asylum for the sustenance and education of male orphan children under 16 years of age and of sound mind. Capacity for 200. Average number of boys, 164. Last year 10,520 dozen pairs of stockings were made for sale, independently of the making and repairing of the clothing of inmates. Controlled by a board of trustees of Brothers of the Christian schools. Supported by an appropriation from the counties and by individual support. Brother Adelberian, president and treasurer, to whom apply at the school.

VERBANK — DUTCHESS COUNTY.—Order of Brothers of Nazareth. (See class VII, division 2.)

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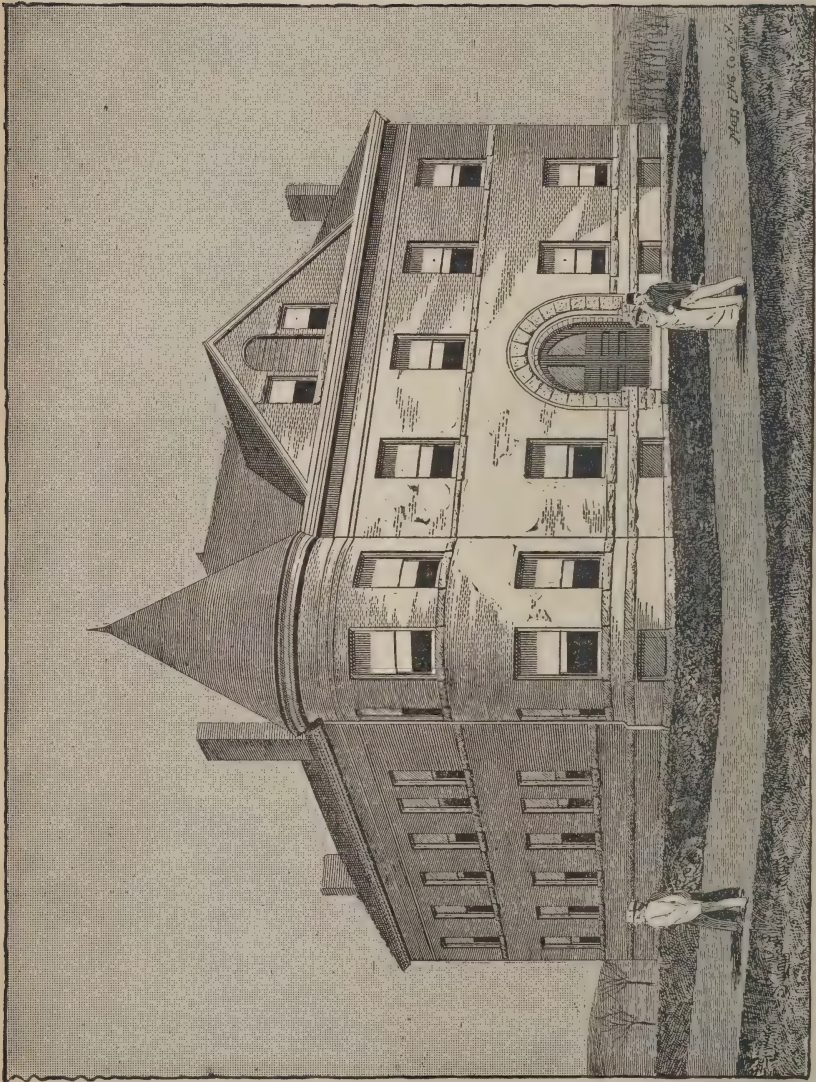
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CHEMICAL LABORATORY, NEW YORK AGRICULTURAL EXPERIMENT STATION.

TENTH ANNUAL REPORT
OF THE
BOARD OF CONTROL
OF THE
NEW YORK
Agricultural Experiment Station,
(GENEVA, ONTARIO CO.)
FOR THE YEAR 1891,
WITH REPORTS OF DIRECTOR AND OTHER OFFICERS.

TRANSMITTED TO THE LEGISLATURE APRIL, 1892.

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IN ASSEMBLY,

APRIL, 1892.

REPORT

OF THE

Board of Control of the New York Agricultural
Experiment Station.

Hon. ROBERT P. BUSH,

Speaker of the Assembly:

SIR.—I herewith transmit to the Legislature the Tenth Annual Report of the New York Agricultural Experiment Station.

Very respectfully,

Your obedient servant.

W. C. BARRY,

President of Board of Control.



1891.

ORGANIZATION OF THE STATION

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Post-office address: Geneva, Ontario county, N. Y.

* Connected with Fertilizer Control.

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TENTH ANNUAL REPORT

OF THE

Board of Control of the New York State Agricultural Experiment Station.

REPORT OF THE EXECUTIVE COMMITTEE.

Since our last report your committee have held monthly meetings at the Station, often with other members of the board being present during our deliberations, and we have to report the following work as having been accomplished.

The new building for the chemical laboratory has been completed so far as called for under the contract with John Moore, Syracuse, N. Y., from plans prepared by E. A. Ellsworth, Holyoke, Mass. Such a laboratory building has been needed since the Station was established, but it was rendered imperatively necessary, in order to carry forward the work of fertilizer analysis, which was by law placed under the direction of the Station.

When fully completed this building will give ample accommodation, in its laboratories, for the chemical work of the Station, as also affording in the future, when the increasing demands of agriculture shall render it necessary to employ certain other specialists, convenient laboratories and rooms for their accommodation. At the present they are to be occupied for such of the assistants in the laboratory and other members of the staff as are unable to secure comfortable quarters convenient to the Station.

The entire building is warmed by the steam-heating apparatus manufactured by Dunning, of Geneva, and the results thus far are entirely satisfactory.

An abundant supply of water has been obtained by the extension of the mains of the water supply from the village of Geneva.

The filling and grading about the new laboratory has been completed so that the earth will have sufficiently settled during the winter to enable the grounds to be properly leveled and sodded in the spring. The sidewalk in front of the Station building has been continued to the railway cut and the roadway filled in to correspond with the entire front of the Station property. A vitrified tile drain has been laid with gradual fall from the laboratory through the orchard to Castle Creek.

Some needed repairs and modifications have been made in the cattle barns and poultry houses, and two new stalls for bulls and three box stalls for cattle have been added to the bull barn.

A new house for carrying forward experiments in breeding with poultry has been completed, since the other poultry sheds were all needed in the several feeding experiments which are being conducted.

The entire line of fences upon Castle Creek and Pre-emption road has been rebuilt and painted, and a permanent trellis been built in the experimental vineyard.

The graveling of the roads of the farm has been continued as opportunity has offered, and certain of the drains on the farm have been repaired.

A block of one-half an acre of several kinds of small nursery stock, cherries, plums, quinces, pears, apples and peaches, has been set out upon the experimental plats for the purpose of facilitating the work of Mr. Fairchild in his investigations of the various diseases which affect such stock, and this work has been from the first appreciated by the nurserymen who have extended to the Station all the needed aid in placing their own blocks of nursery stock at the disposal of Mr. Fairchild, and in making liberal contributions of such stock as was needed for his permanent block upon the Station grounds.

The upper room of the Dairy House has been fitted up for the manufacture of cheese, and the services of Messrs. Smith and Hall of the Dairy Commission were granted freely to supervise the manufacture of cheese, each step of which from the milk to the finished product and extending through the entire period of ripening has been under close and constant chemical supervision. The results promise to throw much light upon this important branch of agricultural industry.

We are pleased to see that the extended investigations of the several breeds of dairy cattle continues to arouse an increasing interest among our dairymen and the breeders of cattle, as is evidenced by the fact that four heifers and a bull of the Devon, a bull and heifer of the Guernsey, a heifer of the Jersey and two heifers of the Holstein-Friesian breed have been presented to the Station herd in order that the tests being made might be rendered as complete as possible.

The colored chart prepared by the director illustrating the food elements and fertilizing value of the various foods and farm products has necessitated a second edition to supply the demand, and several other Stations have secured supplies or contemplate so doing for distribution among their several constituents.

The correspondence of the Station has increased several hundred per cent during the few years past, and the applications for the bulletins of the Station daily increase. Fourteen bulletins have been issued since our last report, aggregating 346 pages, and the demand for its publications and for advice on all matters pertaining to agriculture gives conclusive testimony that the work of the Station is rapidly becoming more and more appreciated by the people, and by its increased dissemination of rapidly increasing value to the farmers of the State in whose behalf directly it is being done.

The value of the agricultural products of New York amount in the aggregate to, at least, \$130,000,000 and probably to \$150,000,000 annually, or upon an average from \$340 to \$400 a year for each of our 380,000 farmers.

The leading crops of New York are equal in value to 5.7 per cent of the total production of the United States; the farm animals to 5.8 per cent; number of milch cows to 9.7 per cent; while their value is 12.4 per cent of the value of all the cows in the United States.

It will be seen, therefore, that our State is not only in name but in comparison with other States, the Empire State, and that the work of our Experiment Station is one of the most important factors in enabling us to retain this proud pre-eminence.

France and Germany combined have nearly nine times the area and nearly fourteen times the population of New York State,

and since the first Experiment Station was established in a Saxon village in 1851 they have so rapidly increased that there are at present 110 in these two countries, while every country in Europe is rapidly increasing their number of these institutions within their borders. Compared with Germany and France in proportion to area, New York should have twelve, and in proportion to population eight of these Stations, and especially when we consider the great diversity which exists in our State in soil, climate and in the character of its agricultural products, in which respect it is doubtful whether New York is surpassed by an equal area upon the globe.

Although perhaps it may not be wise to increase the number of these Stations, it would appear most desirable that everything should be done which may enable the Station, now for ten years established, to carry forward the work of investigation and accomplish that purpose for which it was organized, namely: "For the promotion of every branch of agriculture by scientific investigation and experiment."

In furtherance of this object and in the opinion of the director the following requirements appear of immediate necessity.

1. The completion of the basement laboratories in the new building.

2. Four residences for the married members of the staff.

3. A series of cold storage rooms for determination of the degree of temperature and moisture necessary for the proper preservation of the various fruits and berries.

4. A green-house and forcing-houses by which much of our horticultural work may be carried on the entire year.

5. An ice-house of sufficient capacity to serve the purpose of the Station.

6. The means of printing and distributing an edition of 1,000 of each of our bulletins in each county of the State.

The following statement presents, briefly, the work which has been carried forward in the several departments of the Station during the past year.

The work of the first assistant has been a continuation of his feeding experiments with poultry and swine. He has also had charge of the feeding of the dairy cattle, preparing rations for the different animals, including, on January 1, 1892, sixteen milch

cows, six heifers, and seven bulls, these rations being arranged according to the appetite, condition, age and size of the several animals. The grain feed has been changed at intervals to supplement the forage and coarse fodder available through the several months of the year. He has also prepared bulletins in reference to his work, and continued his investigation with selected varieties of sorghum for the purpose of determining those varieties best suited for the production of sugar, syrup and forage in this State.

The chemist, Dr. Van Slyke, with his assistants, has carried forward the following :

1. Analysis of milk of dairy cattle of different breeds. This work involves the complete analysis each week of from sixteen to twenty samples of milk.

2. Determinations of fat in skim-milk, buttermilk and butter in connection with experiments with breeds of dairy cattle, involving from fifty to sixty determinations each week.

3. Microscopic examination of eight to ten milks each week.

4. Analysis of all foods used in various experiments at the Station.

5. Investigation of cheese:

- (a) Experiments in the manufacture of cheese.

- (b) The influence of composition of milk upon composition and yield of cheese.

- (c) A study of the process of ripening cheese.

6. Analysis of fertilizers.

7. Analysis of chemical compounds and mixtures of chemical compounds used in spraying plants.

8. Miscellaneous analyses.

9. The chemist has attended and addressed the State Dairy-men's Association at Owego, and given addresses on commercial fertilizers at farmer's institutes held at Batavia, Genesee county ; Perry, Wyoming county ; Geneseo, Livingston county ; Lyons, Wayne county, and Albion, Orleans county, and has arranged for several other institutes yet to be held.

10. He has also prepared several bulletins covering the subject-matter of the investigations carried forward by him.

The work of the assistant horticulturist embraces the following :

Varietal tests of small fruits. One of the most complete collections in the United States.

Continued work on cross pollination of strawberries.

Tests of commercial fertilizers on small fruits.

Spraying with remedies for fungoid diseases of small fruits.

Tests of the newly introduced varieties of potatoes.

Tests of commercial fertilizers on potatoes.

Spraying with fungicides for the potato blight.

Tests of the vegetable novelties of late introduction.

Tests of commercial fertilizers on the yield of beans.

Forcing vegetables under glass.

Tests of fertilizers on forced tomatoes.

Planning an exhibit of plant diseases, with remedies, to be shown at fair.

Attendance on fairs with a large exhibit of fruits and vegetables, fertilizer and cattle foods.

Note taking.

The horticulturist, Professor Beach, who entered upon his duties at this Station November 1, 1891, has outlined the following work, a part of which is already under way :

Investigation of plant diseases for the purpose of determining inexpensive and effectual remedies.

Preparation of charts illustrating microscopic characteristics of fungus diseases of economic importance.

Investigation of the accumulation in the soil of compounds used for fungicides and insecticides, and the effect of such soils on vegetation.

Establishing an arboretum of native trees and shrubs.

Experiments in co-operation with the division of vegetable pathology, Washington, D. C., on the use of fungicides for pests of orchard fruits and nursery stock.

The work of Mr. Churchill, agriculturist, embraces the following :

Variety tests of grapes and orchard fruits, making a permanent record for each variety tested.

Investigation into the nature of seedling apples of this section of the State, and the collection of cions from promising varieties for propagation with the view of obtaining new varieties of value for commercial and home use, also for work in cross-fertilization.

Tests of varieties of grains, etc.

Fertilizer experiments with corn on farm.

Continuation of fertilizer experiments with corn on plats.

Routine work, involving the superintendence of labor on the farm and plats, etc.,

The clerk and stenographer (Mr. Newton) has had his time more than filled by the increased correspondence of the Station, the mailing of bulletins and other publications referred to elsewhere in this report, labor involved in the entire charge of the bills, and the regular routine work of the office.

The following statement of the number of letters written, of which copies have been kept, will show the increase in the correspondence of the Station since its establishment :

1882.....	644
1883.....	642
1884.....	218
1885.....	401
1886.....	600
1887.....	405
1888.....	1,204
1889.....	1,209
1890.....	1,360
1891.....	1,561

The bulletin list has rapidly increased and almost entirely through personal application of the farmers, and without effort thus far by the Station, although it is most desirable that such effort should be made ; so soon as the means are provided for the printing and distributing of a much larger edition.

Sometimes from fifty to seventy-five names have been added to the bulletin list in a single day, and the increase during the last nine days, January 1-10, has been 100. During the past year the number of names added to the list has been equal to those of the first eight years. At present there are 5,500 names on the bulletin list

JAMES McCANN,
CHARLES JONES,
GERRITT S. MILLER,
P. N. NICHOLAS,
S. H. HAMMOND,

Executive Committee.

GENEVA, NEW YORK, *January 1, 1892.*

TREASURER'S REPORT.

GENEVA, N. Y., *October 30, 1891.*

To the Board of Control of the New York Agricultural Experiment Station :

As treasurer of the Board of Control, I do respectfully report :

That I have received from the Treasurer of the State of New York, for the twelve months ending September 30, 1891	\$20,000 00
That the balance on hand October 30, 1890, was	36 99
Total	<u>\$20,036 99</u>

And I do further report that I have expended during the twelve months ending September 30, 1891, \$20,018.30, vouchers for which, duly audited by the special auditing committee of the Board of Control, have been furnished the Comptroller of the State of New York.

Properly classified, the expenditure has been as follows :

Farm	\$420 80
Farm implements and tools	18 55
Freight, cartage and express	276 42
Fuel	519 14
Furniture	4 41
Labor	6,296 31
Laboratory department	1,003 03
Library	63 25
Live stock	447 00
Meteorological department	4 75
Permanent improvement	529 28

REPORT OF TREASURER OF AGRICULTURAL EXPERIMENT STATION. 9

Postage expenses	\$326 84
Printing	494 25
Repairs	250 04
Salaries.....	6,873 70
Scientific apparatus	8 18
Stationery	74 62
Sundries	80 08
Supplies	1,449 43
Tenement-houses	100 00
Fuel.....	268 83
Board of Control	509 39
	<hr/>
	\$20,018 30
Balance on hand.....	18 69
	<hr/>
Total	<u>\$20,036 99</u>

And I do further report that I have expended \$2,311, the balance, September 30, 1890, of the special appropriation of \$10,000, vouchers for which, duly audited by the special auditing committee of the Board of Control, have been furnished the Comptroller of the State of New York.

And I do further report that I have received from the Treasurer of the State of New York on account of fertilizer control, \$15,000 ; that the balance on hand September 30, 1890, was \$2, 792.28; total, 17,792.28.

And I do further report that I have expended on this account \$13,560.98, vouchers for which, duly audited by the special auditing committee of the Board of Control, have been furnished the Comptroller of the State of New York.

Properly classified the expenditure has been as follows :

Salaries.....	\$2,704 92
Fixtures and apparatus.....	4 00
Securing samples.....	987 01
Bulletins.....	799 98
Rent of building.....	395 65
Laboratory.....	6,866 84
Repairs.....	19 32

10 REPORT OF TREASURER OF AGRICULTURAL EXPERIMENT STATION.

Supplies	\$924 78
Postage and printing.....	847 83
Freight cartage and express	10 65
	<hr/>
	\$13,560 98
Balance on hand.....	4,231 30
	<hr/>
Total	\$17,792 28
	<hr/> <hr/>

WILLIAM O'HANLON,
Treasurer.

DIRECTOR'S REPORT.*

To the Board of Control of the New York Agricultural Experiment Station:

GENTLEMEN.—I herewith submit the tenth annual report of the Experiment Station for the calendar year 1891.

The report of the executive committee of the Board of Control will show what has been accomplished under their direction during the past year in the erection of the new chemical laboratory and in the necessary repairs and improvements to buildings, fences and roads. Their report presents also a general statement of the work which has been carried forward by the different members of the staff, and their opinion as to what additional facilities are demanded in order to render the work of the Station of still greater value to the farmers of the State.

BULLETINS PUBLISHED DURING THE YEAR 1891.

During 1891 there have been distributed twelve bulletins, containing an aggregate of 326 pages, upon the following subjects:

Bulletin No. 26.—January, 1891.

New York State Fertilizer Control:

Outline of the history of commercial fertilizers.

General principles underlying the use of commercial fertilizers.

Bulletin No. 27.—February, 1891.

New York State Fertilizer Control:

General principles underlying the use of fertilizers.

Bulletin No. 28.—April, 1891.

Pig feeding experiments with coarse foods :

Results with prickly comfrey.

* Peter Collier, A. M., M. D., Ph. D.

Oat and pea forage and red clover.
Clover with and without salt.
Sorghum and mangolds.

Bulletin No. 29.— April, 1891.

Feeding experiments with laying hens :

More and less nitrogenous rations.
Difference in the general health.
Products of eggs compared.
Results for several periods.
Average results tabulated.
Some general conclusions.
Results of dissection.
Comments.

Bulletin No. 30.— May, 1891.

Cabbage and cauliflower :

A comparative test of imported versus American grown seed.

Tomatoes :

A comparison of yields of several varieties grown by different methods.
A description of varieties.
Tests with seed from green and ripe fruits.

Bulletin No. 31.— May, 1891.

Commercial valuation of the food and fertilizing constituents of feeding materials.

Bulletin No. 32.— ———

New York State Fertilizer Control :

Description of materials used in making commercial fertilizers.
Fertilizing materials produced on farms.
Fertilizing composition and valuation of various products.

Bulletin No. 33.— July, 1891.

New York State Fertilizer Control :

Explanation of terms of chemical analysis.
Commercial valuations of fertilizers.
Composition of various chemical compounds.

Bulletin No. 34.— August, 1891.

Comparison of dairy breeds of cattle with reference to production of butter.

Bulletin No. 35.— August, 1891.

Some of the most common fungi and insects with preventives.

Bulletin No 36.— September, 1891.

Small fruits :

The strawberry :

Insect enemies of the strawberry.

The raspberry :

Diseases of the raspberry.

Insect enemies of the raspberry.

The blackberry.

The currant :

Insect enemies of the currant.

The gooseberry :

Gooseberry mildew.

Bulletin No. 37.— November, 1891.

Investigation of cheese :

Experiments in the manufacture of cheese.

Influence of composition of milk on composition and yield of cheese.

A study of the process of ripening of cheese.

GIFTS TO THE STATION.

January 21. Genesee Valley Salt Company, Piffard, N. Y., 448 pounds of fine salt.

January 27. Cleveland Linseed Oil Company, Cleveland, O., five bags of linseed meal.

February 2. Francis Brill, Hempstead, N. Y., cabbage and cauliflower seed.

February 9. J. M. Vandervort & Son, New Antioch, O., seedlings of the pear and apple.

February 16. W. H. Hallock & Co., Queens, N. Y., a collection of vegetable seeds.

February 20. Dr. E. Lewis Sturtevant, South Framingham, Mass., some Christiana melon seed.

February 23. Joel Horner & Son, Delair, N. J., melon and tomato seed.

March 17. The Steele Brothers Company, Toronto, Canada, spring wheat and some carrot seed.

March 20. United States Department of Agriculture, Washington, willow cuttings, Chinese potato bulblets, sorghum seed, and conifer seeds.

March 27. Royal Church, Harrisonville, O., raspberry plants.

March 31. T. Greiner, La Salle, N. Y., German grafting wax.

April 1. R. D. Luther, Fredonia, N. Y., plants of the Luther blackberry.

April 6. Stephen Reeves, Marion, N. Y., seedling pear cions.

April 13. Conklin & Mersereau, Binghamton, N. Y., seed corn.

April 14. The Mark W. Johnson Seed Company, Atlanta, Ga., seed beans.

April 15. Samuel Wilson, Mechanicsville, Penn., peach trees, strawberry and dewberry plants, and wheat.

April 15. Charles Wright, Seaford, Del., peach trees.

April 15. George L. Miller, Stockton, O., strawberry plants.

April 17. Charles Mills, Fairmont, N. Y., raspberry plants, and a seedling currant.

April 17. William H. Maule, Philadelphia, Penn., three pounds of potatoes.

April 17. A. H. Griesa, Lawrence, Kans., red raspberry plants.

April 18. J. T. Thompson, Oneida, N. Y., seedling raspberry plants.

April 20. Of the American Glucose Co., Buffalo, N. Y., one ton of No. 1 patent process feed.

April 20. F. Barteldes & Co., Lawrence, Kans., vegetable seeds.

April 21. George W. P. Jerrard, Caribou, Me., potatoes, beans, squashes.

April 27. John Hazelton, Delaware, O., strawberry plants.

April 28. C. W. Minot, Burlington, Vt., twelve kinds of potatoes.

April 29. W. S. Powell & Co., Baltimore, Md., fungicides.

April 30. David Feight, Dayton, O., strawberry plants.

April 30. H. A. Jones, Himrods, N. Y., pear trees.

May 1. S. J. Smith, Manchester, N. Y., beans.

May 8. D. J. Piper, Forreston, Ill., strawberry plants.

May 8. J. R. Michelson, Oak's Corners, N. Y., raspberry plants.

May 9. Vilmorin, Andrieux et Cie., Paris, France, vegetable and flower seeds.

May 14. C. S. Curtice Company, Portland, N. Y., grape vines.

May 20. Jerome B. Rice & Co., Cambridge, N. Y., vegetable seed.

May 29. Alfred Boyd, Toronto, Canada, flax seed.

June 12. C. H. Bootes, Potter Centre, N. Y., German carp.

June 27. Joshua I. Maxwell, Geneva, N. Y., Holstein-Friesian
Herd Book, Volume 8.

Ellwanger & Barry, Rochester, N. Y., clematis and ampelopsis
plants, and fifty roses.

December 11. Dr. E. A. Sheldon, Oswego, N. Y., White Leghorn
cockerel.

NEWSPAPERS AND PERIODICALS PRESENTED TO THE STATION.

Agricultural Epitomist, Indianapolis, Ind.

Agriculturist and Live Stock Gazette, Jamesburg, N. J.

Albany Weekly Journal, Albany, N. Y.

American Agriculturist, New York, N. Y.

American Cultivator, Boston, Mass.

American Dairyman, New York, N. Y.

American Farmer, Middletown, Md.

American Grange Bulletin, Cincinnati, Ohio.

American Grocer, New York, N. Y.

American Homestead, Omaha, Neb.

American Stock-Keeper, Boston, Mass.

Baltimore Weekly Sun, Baltimore, Md.

Boston Weekly Globe, Boston, Mass.

Breeders' Gazette, Chicago, Ill.

Canadian Entomologist, Fort Hope, Canada.

Chautauqua Farmer, Dunkirk, N. Y.

Cultivator and Country Gentleman, Albany, N. Y.

Detroit Free Press, Detroit, Mich.

Deutsche Wolkerie-Zeitung, Berlin, Germany.

Every Week, Angelica, N. Y.

Farmers' Advocate, London, Canada.

Farm and Fireside, Philadelphia, Penn.

Farm and Home, Springfield, Mass.

Farmers' Home, Dayton, Ohio.

Farm Journal, Philadelphia, Penn.

Farm Life, Rochester, N. Y.

Farm, Stock and Home, Minneapolis, Minn.

German Agricultural and Horticultural Journal, New York, N. Y.

Hoard's Dairyman, Fort Atkinson, Wis.

Holstein-Friesian Register, Boston, Mass.
Home and Farm, Louisville, Ky.
Horticultural Art Journal, Rochester, N. Y.
Hospodar, Omaha, Neb.
Husbandman, Binghamton, N. Y.
Industrial American, Lexington, Ky.
Jersey Bulletin, Indianapolis, Ind.
Ladies' Home Companion, Philadelphia, Penn.
Louisiana Planter and Sugar Manufacturer, New Orleans, La.
Maritime Agriculturist, St. John, N. B.
Maryland Farmer, Baltimore, Md.
Milk Reporter and Daily Record, New York, N. Y.
Mirror and Farmer, Manchester, N. H.
Monthly Weather Review, Washington, D. C.
National Provisioner, New York, N. Y.
Nebraska Bee-Keeper, York, Neb.
Nebraska Farmer, Lincoln, Neb.
New Dairy, New York, N. Y.
New England Farmer, Boston, Mass.
Northwestern Farmer, St. Paul, Minn.
Orange County Farmer, Port Jervis, N. Y.
Orange Judd Farmer, Chicago, Ill.
Orchard and Garden, Little Silver, N. J.
Our Country Home, New York, N. Y.
Peninsula Farmer, Federalsburg, Md.
Poultry Monthly, Albany, N. Y.
Practical Farmer, Philadelphia, Penn.
Rural New Yorker, New York, N. Y.
Shorthorn Gazette, Indianapolis, Ind.
Southern Cultivator, Atlanta, Ga.
Sugar Beet, Philadelphia, Penn.
Sugar Bowl and Farm Journal, New Orleans, La.
Vick's Illustrated Monthly Magazine, Rochester, N. Y.
West American Scientist, San Diego, Cal.
Western Breeder, St. Joseph, Mo.
Western Garden and Poultry Journal, Des Moines, Iowa.
Western Plowman, Moline, Ill.
Western Resources, Lincoln, Neb.
World, New York, N. Y.

THE AGRICULTURE OF THE EMPIRE STATE.

The New York Agricultural Experiment Station was wisely established, as is stated in the words of the act "For the purpose of promoting every branch of agriculture by scientific investigation and experiment."

In 1851 the first experiment station was established at Mockern in Saxony. To-day there are in Germany and France alone 110. In proportion to area New York should have thirteen, in proportion to population eight.

But it may be urged that a comparison with these countries of the old world will hardly apply to us, let us therefore present a few statistics concerning the Empire State as compared with its nearest neighbors, the New England and Middle States.

The following statistics are compiled from the annual reports of the Department of Agriculture, 1879 to 1888 :

REPORT OF THE DIRECTOR OF THE

AVERAGE ACREAGE YIELD PRINCIPAL FARM CROPS, 1879 to 1889.

	Corn, bushels.	Wheat, bushels.	Rye, bushels.	Oats, bushels.	Barley, bushels.	B'k wheat, bushels.	Potatoes, bushels.	Tobacco, pounds.	Hay, tons.
Maine.....	31.76	13.79	13.45	28.28	21.87	19.35	98.70	.....	.98
New Hampshire.....	32.34	14.00	11.18	32.79	21.68	17.90	91.60	1,517.2	.94
Vermont.....	32.66	16.76	14.23	33.28	24.88	18.69	102.61	1,489.5	1.06
Massachusetts.....	31.75	16.50	14.06	30.28	23.05	14.00	95.34	1,487.1	1.13
Rhode Island.....	30.18	12.80	12.03	27.73	23.43	10.70	92.07	.....	1.04
Connecticut.....	29.91	16.87	13.75	27.85	21.60	12.31	82.06	1,421.0	1.03
New Jersey.....	30.86	12.86	10.70	27.59	17.24	13.56	78.59	1,102.5	1.11
Maryland.....	25.16	12.48	10.53	20.53	25.20	13.74	70.03	658.0	1.09
Delaware.....	20.21	11.71	9.13	21.40	.....	14.32	.....	678.4	1.04
Pennsylvania.....	31.55	12.94	10.73	28.56	20.35	13.87	75.97	1,231.4	1.16
Average.....	29.64	14.07	11.98	27.83	19.94	14.84	78.70	1,198.0	1.06
New York.....	30.22	14.84	12.05	29.06	22.89	14.06	80.32	1,342.6	1.12
New York's relative position....	7th	4th	5th	4th	5th	5th	7th	5th	3d

It is gratifying to observe that for ten years the average acreage yield of the principal farm crops in New York has in every crop exceeded the average of the New England and Middle States, as the above table shows; but, as will be seen, New York stood upon acreage fifth in the list of these states in its average yield.

In 1888 the above crops had an acreage of 8,967,318 and a value of \$121,333,857, while all the New England and Middle States without New York and Pennsylvania had an aggregate acreage of 6,672,642 acres, and their products of the above are valued at \$94,321,795; only seventy-eight per cent of area and seventy-four per cent of value of New York.

Had New York stood first of the New England and Middle States instead of averaging fifth she would have received an aggregate of \$39,573,827.86 more for these leading crops than she did. Does anybody believe our lands to be less fertile, our people generally less clever than those of the New England and Middle States.

The New England States and the Middle States excepting New York and Pennsylvania have in all nine Experiment Stations. Had New York a number proportional to its acres of cultivated land it would have eleven. Had it Stations in proportion to the aggregate value of its leading crops, it would have twelve.

The following table presents a comparison of certain of the agricultural statistics of New York with the New England and Middle States, excepting Pennsylvania, an examination of which may surprise many who have not had their attention directed to the matter.

COMPARATIVE STATISTICS OF NEW YORK AND THE NEW ENGLAND AND MIDDLE STATES.

	Number acres in leading crops 1888.	Total value of leading crops 1888.	Number of farms.	Number of farmers.	Number of cows.	Value of cows.	Acres improved in farms.	Acres un- improved in farms.	Total acres in farms.	Area in square miles.	Per cent in farms.
Maine	1,594,252	\$20,186,946	64,309	82,130	175,940	\$4,398,725	3,484,908	3,067,670	6,552,578	33,040	31
New Hampshire	802,184	9,574,799	32,181	44,490	103,011	2,846,194	2,308,112	1,413,061	3,721,173	9,365	62
Vermont	1,303,476	14,592,101	35,522	55,251	234,642	5,572,748	3,286,461	1,596,127	4,882,588	9,665	80
Massachusetts	792,638	14,905,768	38,406	64,973	174,729	5,678,693	2,128,311	1,230,768	3,359,079	8,315	63
Rock Island	132,755	2,394,387	6,216	10,945	24,041	745,271	288,486	216,327	514,813	1,250	64
Connecticut	741,800	13,112,938	30,598	44,026	134,897	4,192,699	1,642,188	811,353	2,453,541	4,990	77
New Jersey	1,305,537	19,604,856	34,307	59,214	183,493	6,325,004	2,096,297	833,476	2,929,773	7,815	59
Delaware	398,877	4,062,271	8,749	17,849	29,543	812,433	746,958	343,287	1,090,245	2,050	83
Maryland	1,840,854	22,914,300	40,517	90,927	141,826	3,454,881	3,342,700	1,777,131	5,119,831	12,210	66
Total	8,912,373	\$121,298,366	290,805	469,805	1,202,132	\$34,026,548	19,334,421	11,289,200	30,623,621	88,600	Ave. 54
New York	8,967,318	121,333,857	241,058	377,460	1,552,373	43,687,205	17,717,862	6,062,892	23,780,754	49,170	76
Ratio	106	100.3	82.8	80.3	129.1	128.3	91.6	53.7	77.7	55.5	141

But not only is our State imperial in its extent of area and the aggregate of its productions, but also, and this is a most pertinent point of the discussion, in the great diversity of its agricultural products.

William C. Barry told us in his address as President of the Western New York Horticultural Society that there were in New York 43,350 acres in vineyards. That in 1889 the grapes sold in New York amounted to \$5,512,215 and those of California to \$4,745,097. New York equals sixteen per cent more.

Our dairy cattle numbered January, 1892, 1,552,217, valued at \$40,637,041, nine and one-half per cent of the total number and eleven and one-half per cent of the aggregate value of all the dairy cattle in the United States.

It is estimated that the capital invested in the dairy industry in the State of New York is \$400,000,000.

For simply protecting the products of this industry the sum of \$95,000 has been placed upon the appropriation bill.

As to all police supervision, we may say in the words of Burns, "what's done we partly may compute, we know not what's resisted." But with all which has been accomplished by this expenditure we will all agree that it has not brought substantial relief to the dairymen of our state in increased prosperity and enhanced prices.

We do not wish to be understood as objecting or even offering to object to this appropriation of \$95,000, but to our minds it is clear that had an equal sum been expended in educating and informing our dairymen as to the details and the economies of their business, we feel confident that their products might bid defiance to oleomargarine and all its allies in our markets, and this dairy industry instead of being depressed might soon become one of the most profitable industries of the country.

Let us briefly point out how this may be accomplished.

1. We have, mainly as gifts outright to the State from the several breeding associations of the country one of the finest herds of cattle ever brought together, consisting of: Five Holsteins, five Ayrshires, four American Holderness, six Guernseys, five Jerseys, three Short Horns and five Devons.

These came from herds in New York, Pennsylvania, Vermont, Massachusetts, Connecticut and Rhode Island, and are all regis-

tered animals of finest blood. They are fed the same food, receive the same care, and yet in cost of production of milk the best is to poorest as 100 is to 162, while in cost of production of butter the best is to the poorest as 100 is to 196, while one may be among the least profitable for milk and among the most profitable for butter production.

The annual average of our dairy cows in butter is from 125 to 127 pounds, but we have the report of one dairyman whose herd averaged last year 394 pounds of butter per cow, and he explains why it was not fifty pounds more, and says his herd for the past sixteen years has not failed to yield him an average of 300 pounds per cow and a net profit of over fifty dollars each per annum. On the other hand we find that seventy-five per cent of the cows in one of our best dairy sections of the State have not paid their cost.

2. Two of our leading dairymen, each getting an average butter product of over 300 pounds per annum per cow, feed rations costing respectively sixteen and thirty-one and one-half cents daily per cow, but a saving of one cent per day in the rations of our dairy animals in this State is \$15,522 per day or \$5,680,000 annually.

3. We have proved at the Experiment Station at Geneva that milch cows gave back in the liquid and solid manure a value in fertilizing constituents, nitrogen, potash and phosphoric acid, equal to seventy per cent of the market value of the feed fed the animals and that three-fifths of this was in the liquid portion. Now the milch cows of this State annually consume, at thirty-six dollars each, \$56,000,000 worth of food, seventy per cent of which is \$39,200,000; we have besides 1,462,872 horses, mules and oxen costing quite as much more, as also 2,234,747 sheep and hogs. It is safe to estimate the manure made upon the farms of this State at \$100,000,000 of which it is also safe to estimate that one-half or two-thirds is allowed to waste.

We have sought to impress these facts upon our farmers by means of a colored chart which gives the relative amount of these fertilizing and food constituents in the several farm products and cattle foods. These charts have been distributed to granges, agricultural societies and farmers' clubs throughout the State, and have been ordered by Stations of several other States for distribution in those States.

If we can impress our farmers with the importance of this single point in their practice we shall have repaid many hundred-fold all the expense of our Experiment Station.

In connection with this subject it is well to mention that we annually buy in this State four or five million dollars' worth of commercial fertilizers and through the supervision of this business on the part of the Experiment Stations of the country it has resulted that in their purchase of \$4,000,000 worth of these products, the farmers of this State are able to save at least \$6,000,000 annually.

This may appear a paradox but is literally true, since such has been the improvement in quality and reduction in price of these commercial fertilizers during the past twenty years, that the farmers of to-day can for \$4,000,000 buy the same aggregate of nitrogen, potash and phosphoric acid, for which they would have had to pay ten or eleven million dollars twenty years ago. While business competition has been largely the cause of this improvement in quality and reduction in price, such competition has arisen through the increased information concerning these products which the Experiment Stations have diffused among the people.

To illustrate some of our work a sample of beans from the Genesee Valley was recently received at the Station. Many doubtless know that New York produces nearly one-half (42.4 per cent) of the bean crop of the United States.

This malady affecting these beans might result in the entire destruction of this industry. At present it is of little concern, but we can perhaps remember the first Colorado beetle we ever saw, which since has caused a loss of hundreds of millions of dollars to this country.

A delegation of grape growers visited the Station lately to confer with reference to certain diseases of the vine, foliage and fruit, which were putting in an appearance in the vineyards. As evidence of the amazing rapidity of these invasions of disease, one gentleman who had inspected a diseased vineyard in one section of the State reached home on a Saturday and carefully inspected his vines to see if this new disease had appeared in his own vineyard, and said that he easily carried

in one hand the vines and leaves he found infested, but the following Monday, as he said, a hay rack would not have held the diseased vines, so rapid had been the progress of this disease.

The gooseberry as is known has largely disappeared from our market owing to the mildew, and yet at the Experiment Station we have for successive years grown it absolutely free from any trace of mildew upon either foliage or fruit.

Many have doubtless heard of how suddenly the black-knot invaded and destroyed several thousand plum trees for Mr. George T. Powell, apparently free one year before; and yet after half a century of the ravages of this destructive pest of the fruit grower it is but recently that its true character and life-history has become known and the means of its destruction determined.

Another line of investigation has been developed within recent years and it is found that many of our prevalent diseases in both the animal and vegetable kingdoms are due to minute forms of life now known as bacteria, not only this but many of the commonest phenomena of farm life are found to be attributable to these bacteria.

Agricultural science need never lack friends so long as the memory of Pasteur and his achievements remains. It may be recalled how not many years ago a unique consignment passed through this State consisting of two car-loads of silk-worm eggs en-route from Japan to Italy, valued at \$250,000, the commercial result wholly of Pasteur's investigations.

In carrying forward the work for which the Station was organized, it is obviously impossible to enter upon every line of investigation at once, but it is equally clear that no "branch of the agricultural industry" is to be permanently denied the benefits which may follow "scientific investigation and experiment." It is obvious therefore, that such a Station, if it is to accomplish that for which it was established, must gradually reach out into new fields of inquiry, extend its researches into new branches of agriculture, and be prepared to meet new problems which are constantly presenting themselves to the farmer; in short it must be a growing institution, and must be constantly presenting its needs for the means of such development.

During the past four years, the Legislature has generously responded to these demands, and the increased work done appears

to have met the cordial approval of those who have been cognizant of the work, and for whom directly it has been done. We know of no expenditure of public money which can result in greater pecuniary return to our people.

We need hardly say that for the work of such investigation as the demands of modern agriculture have forced upon us, there is need for the highest skill which the State can secure. For the solution of the problem of that silk-worm disease, now known as Pebrine, the president of the French academy selected his most esteemed pupil and friend. The results secured at our Experiment Stations, the lessons taught by those who are engaged in these investigations, are to be at once carried into practice by those of our farmers who seek guidance and counsel from these Stations, and the very best service which can be rendered is none too good for the important work, and for such service we must expect to pay as liberally at least as do our colleges, universities and private corporations for similar service.

During the past year there has been the most gratifying evidence that the work at the Station is becoming more and more highly appreciated at home and abroad. The increase in the correspondence and in requests for bulletins has never been so great as during the past year, and daily letters testify to the practical value of our work.

There is another matter to which it is well to call attention. New York consumes annually nearly or quite \$20,000,000 worth of sugar, syrup and molasses.

In 1811 Napoleon practically prohibited the introduction of sugar and molasses into France, and appropriated 1,000,000 francs for the establishment of six experiment stations in which the growing of beets and the manufacture of sugar therefrom should be taught, as he expressed it, "conformably to the processes of the chemists." From such beginning this industry has extended until to-day three-fifths of the world's commercial supply of sugar is made from the beet.

We think it would be wise to investigate the capability of the soils and climates of this State for the production of beets suitable for the production of sugar. There is no need to enter upon its manufacture, since the economic details of this process are as thoroughly understood as the manufacture of flour from wheat.

But we presume few have kept up with the recent progress of sugar manufacture from another plant, sorghum, to which it is desirable to call attention. Thus far no experiments have been made in this State with sorghum which by the wildest imagination could be called scientific, looking to it as a possible source of our sugar supply.

Several years ago Dr. Goessmann, the director of the Massachusetts Agricultural Experiment Station at Amherst, Massachusetts, in a report which was published in the transactions of the New York Agricultural Society, said :

“When the beet root was first cultivated for the manufacture of sugar, it contained only from seven to eight per cent of sugar, but by the application of proper care to the cultivation and to selecting the best specimens for seed, the percentage was increased to from eleven to twelve in some species. Should it be possible to increase the percentage of the sugar in the sorghum in the same ratio, its successful cultivation would become an accomplished fact; and our farmers, aided by their superior skill, more perfect machinery and many other advantages afforded by this country, would be able to compete successfully with the planters of the West Indies.”

The *American Grocer*, of New York, in an editorial in its issue of November 11, 1891, says :

“We believe if private capital could be more extensively employed, and the formation of stock companies by adventurers who are less interested in sorghum than in making money by selling stock, done away with, and sorghum sugar manufacture would soon become a great national industry.

The *National Provisioner*, of New York, under date of December 5, 1891, says, editorially :

“There seems to be no reason,” says Secretary Rusk, “why we should not look forward with confidence to the day when the \$100,000,000 paid by Americans to foreign producers for sugar shall be turned into the pockets of our own people!” “Very true, Mr. Secretary,” adds the editor, “and others besides you will be grievously disappointed if the process of extracting sugar from sorghum proves anything short of absolute success.”

A letter to this Station from one in charge of sorghum experiments under the United States Department of Agriculture in Kansas, says :

"I believe now we can expect field cane to have an average of fourteen per cent of sugar in the juice, and Dr. Wiley says we can now expect 200 pounds of sugar from a ton of such cane."

A recent letter from a veteran sorghum grower and manufacturer of Minnesota, of thirty-five years' experience, says that last season, which was for growing sorghum the worst but one in thirty-five years, he paid two dollars a ton for the unstripped cane (an excellent price to the farmer growing it) and sold his syrup at forty cents a gallon and his sugar at 4.1 cents, netting each day of ten hours fifty-one dollars and forty cents.

The State Inspector of Kansas-made sugar, officially reports as follows concerning the Fort Scott Sorghum Sugar Factory :

"The Fort Scott Company contracted for 1,000 acres of cane, all of which was delivered. The crop was backward and of inferior quality compared with former years, but notwithstanding the fact that over 1,000 tons less of cane were worked for sugar than last year (1890) the amount of sugar manufactured exceeded last year's (1890) crop by 101,439 pounds. The total value of the year's product was \$35,172. The total cost of production was \$23,803.22, leaving a profit of \$11,368.78." The inspector continues as follows: "The results obtained at Fort Scott under unfavorable circumstances demonstrate that the business can now be successfully conducted when the required conditions are fully complied with. Because there has been a failure to realize a profit at other places indicates that there has been bad management."

Without making any recommendation we would add that for four successive years we have grown at the Experiment Station several varieties of sorghum which averaged a content of sugar equal to the average of sugar cane in Louisiana.

The immediate and pressing needs of the Station to enable the carrying forward of the work which is demanded are as follows :

1. The completion and equipment of the new laboratory, estimated at \$6,000.

2. The building of at least four houses for the accommodation of married members of the staff, \$12,000.

3. Greenhouse and forcing houses in order to carry on work during winter in horticultural investigation, \$8,000.

4. Cold storage-room, \$4,500.

5. An ice-house, \$500.

6. Printing 50,000 bulletins each month, \$8,250; postage on 600,000 at one cent, \$6,000; envelopes, 600,000 at three dollars and twenty cents, \$1,920; mailing lists, \$500; two mailing clerks at forty dollars a month, \$960; total, \$48,630.

The above items are substantially the same which it will be seen are recommended by the executive committee in their report.

INVESTIGATION OF THE SEVERAL BREEDS OF DAIRY CATTLE.

"In some scientific books the opinion was confidently put forth that if you increase the quantity of fat in the fodder you increase the relative quantity of butter in the milk. It is a matter of some consequence to know these things. When we have made four or five series of careful experiments in which we have weighed the milk in all its parts, the fat, caseine, the sugar and salts, separately, and have weighed the food in all its parts in the same manner, so that we know exactly what went into the cow and what came out of her, we are in a position to say what are the facts. It is not my opinion or your opinion; it is not a case of "I guess so," or "It can't be otherwise;" all that has little real value unless there be behind it an evident basis of impregnable fact."—Prof. Samuel W. Johnson, Yale College, Conn., 1873.

The above quotation is from an address given many years ago by one to whom agricultural science in America, at least, is more greatly indebted than to any other of the hundreds who have ably contributed to its advancement; and since the above-quoted remarks were made very many investigations, more or less complete, have been undertaken, looking to the solution by careful experiment of the comprehensive question suggested by this eminent scientist.

Less specific but of the same tenor were those words of Sir Humphrey Davy who said that "nothing is more needed in agriculture than experiments in which all the circumstances are minutely and scientifically detailed. This art will advance with rapidity in proportion as it becomes exact in its methods."

Nothing that I can say could add to the words of these eminent authorities, and those engaged in the work of investigation will be most successful who follow most closely the general and specific instructions above recorded.

The investigations of this problem planned at this Station have from the first been upon the lines so clearly laid down, confident that in no other way can a satisfactory conclusion be secured, and it is along these lines that it is intended to continue until an accumulation of testimony shall have been secured sufficient to reconcile many at present apparently conflicting opinions, to confirm many others which appear to be conclusive, as also to determine many questions intimately associated with the leading problems, concerning which at present no rule of practice exists founded upon well ascertained experimental data.

Of such immense practical importance is this investigation and of such scientific interest that it should be entered upon and carried forward with as little delay as possible, and yet so manifold and intricate are the questions involved in its discussion that a speedy conclusion of the whole matter can only be hoped for as the result of prolonged investigation, but the following record of results already accomplished, and of data already secured which shall perhaps find its greatest value as a basis for future conclusions, is presented, confident that the work will commend itself to our intelligent dairymen as being in the right direction.

In this investigation full-blooded registered animals were used as follows :

One Holstein-Friesian.

Four Ayrshires.

Three Jerseys.

Two American Holderness.

Two Guernseys.

Two Devons.

The above fourteen cows were in their first period of lactation, so that whatever results may appear to be established are such only as apply to the age of the animals experimented with, and the conditions which surrounded them at the Station.

All food and water was taken in the stable and upon every fair day exercise was allowed them in the yard.

Since certain of the conclusions which appear to be established from the investigations are not only of scientific interest and great practical importance, but also at variance with general belief in certain points, it has appeared desirable that, so far as practicable, the data upon which these conclusions are based should be pre-

sented in order that those interested in this investigation should themselves be able to judge to what extent the conclusions are sustained by the facts.

It will be seen that there are certain general principles which apply to every breed and to every individual, while there are to be seen certain characteristics peculiar to each of the several breeds.

A discussion of the data will be reserved mainly until the data thus far secured has been presented.

The following table gives the names of the animals, their breed, date of birth, time of calving and age at time of calving.

NAME OF COW.	When born.	Date of calving.	Age at calving.
<i>Ayrshires.</i>			<i>Days.</i>
Queen Duchess.....	Feb. 21, 1888	July 24, 1890	884
Junietta Peerless.....	July 26, 1888	Feb. 4, 1891	923
Manton Belle.....	June 16, 1888	Dec. 11, 1890	908
Miss Flow 5th.....	March 1, 1888	Feb. 5, 1890	706
<i>Jerseys.</i>			
Gilderbloom.....	April 6, 1888	Sept. 9, 1890	886
Countess Flavia.....	May 14, 1888	April 19, 1890	705
Barbara Allen.....	Aug. 18, 1888	Aug. 29, 1890	741
<i>American Holderness.</i>			
Nellie 6th.....	Aug. 10, 1888	Sept. 13, 1890	764
Maggie 6th.....	Aug. 15, 1888	Sept. 25, 1890	771
<i>Guernseys.</i>			
Rosette Ford.....	May 10, 1888	Nov. 14, 1890	918
Oriole.....	Aug. 25, 1888	Dec. 7, 1890	834
<i>Devons.</i>			
Ione.....	March 5, 1888	March 7, 1891	1,097
Genevie's Gift.....	Sept. 19, 1889	May 15, 1891	603
<i>Holstein-Friesians</i>			
Esel 2d.....	June 22, 1888	July 16, 1890	754
Averages.....	July 8, 1888	Oct. 28, 1890	821

The following table gives the kind and amount of each food eaten by each animal during each month of the experiment, and it will serve as a guide to those who may desire, during the different months of the year, to supply their animals with a similar ration.

Letters of inquiry are frequently addressed to the Station asking for information as to the rations needed for production of the best results, and by consulting the following table one may learn what ration was fed the several animals of our herd each month in the year, and by comparing with other tables presented in this report the effect of such feed, as also of the changes from one kind of feed to another, may be determined, and the knowledge thus obtained is sure to be of interest and may be of great value by way of suggesting certain experiments indicated by the results here recorded. As is well known to the practical feeder, very marked differences are found to result from simply a change of feed without regard to the difference in composition of such feed, and the following pages will record many such changes made with our herd and the results presumably produced thereby :

FOOD FED COWS DURING EXPERIMENTS.

	NAME.	Pounds hay.	Pounds ensilage.	Pounds green forage.	Pounds roots.	Pounds grain, mixed.
1890						
February	Miss Flow 5th	183.6	.....	.....	38.0	82.5
March	Miss Flow 5th	326.0	230.0	.....	7.3	186.0
April	Miss Flow 5th	378.9	.....	.....	463.1	180.0
April	Countess Flavia	97.1	.....	.....	176.0	25.3
May	Miss Flow 5th	355.0	633.0	.....	.....	246.6
May	Countess Flavia	297.5	569.2	.....	.....	187.5
June	Miss Flow 5th	506.4	660.0	.....	.....	295.4
June	Countess Flavia	450.6	555.6	.....	.....	270.0
July	Esel 2d	36.0	.....	344.0	.....	48.0
July	Miss Flow 5th	136.0	.....	832.2	.....	273.5
July	Queen Duchess	22.0	.....	124.7	.....	18.5
July	Countess Flavia	347.4	.....	439.5	.....	278.9
August	Esel 2d	139.5	636.3	619.8	.....	253.2
August	Miss Flow 5th	146.4	504.7	567.2	.....	274.6
August	Queen Duchess	119.6	472.4	485.1	.....	193.0
August	Countess Flavia	148.6	467.4	470.3	.....	279.0
August	Barbara Allen	12.0	90.0	.....	.....	6.0
September	Esel 2d	147.2	1073.5	200.0	.....	265.5
September	Miss Flow 5th	143.7	799.9	160.0	.....	218.7
September	Queen Duchess	119.2	800.0	160.0	.....	172.9
September	Countess Flavia	144.6	783.6	160.0	.....	245.5
September	Barbara Allen	119.8	700.7	150.0	.....	129.0
September	Gilderbloom	77.3	468.1	149.6	.....	72.0
September	Nellie 6th	34.7	205.4	121.5	.....	35.0

September ..	Maggie 6th	20.5	10.4	128.1	.....	279.0
October	Esel 2d	307.5	.....	499.2	219.9	217.0
October	Miss Flow 5th	272.2	.....	399.5	198.0	217.0
October	Queen Duchess	275.0	.....	400.0	198.0	217.0
October	Countess Flavia	243.9	.....	398.0	198.0	248.0
October	Barbara Allen	243.8	.....	353.9	198.0	207.1
October	Gilderbloom	233.3	.....	364.1	198.0	217.0
October	Nellie 6th	191.3	.....	282.9	196.4	177.0
October	Maggie 6th	214.8	.....	190.9	198.0	170.0
November ..	Esel 2d	367.5	.....	.....	600.0	270.0
November ..	Miss Flow 5th	339.0	.....	.....	538.2	210.0
November ..	Queen Duchess	338.1	.....	.....	540.0	210.0
November ..	Countess Flavia	308.7	.....	.....	540.0	240.0
November ..	Barbara Allen	308.9	.....	.....	540.0	210.0
November ..	Gilderbloom	275.0	.....	.....	540.0	210.0
November ..	Nellie 6th	270.6	.....	.....	540.0	189.3
November ..	Maggie 6th	264.6	.....	.....	540.0	206.8
November ..	Rosette Ford	144.5	.....	.....	225.0	18.5
December ..	Esel 2d	386.0	520.7	.....	.....	279.0
December ..	Miss Flow 5th	352.9	516.5	.....	.....	217.0
December ..	Queen Duchess	367.9	515.9	.....	.....	217.0
December ..	Manton Belle	259.8	346.7	.....	.....	.....
December ..	Countess Flavia	319.0	467.2	.....	.....	248.0
December ..	Barbara Allen	325.0	467.0	.....	.....	217.0
December ..	Gilderbloom	278.3	459.8	.....	.....	217.0
December ..	Nellie 6th	221.9	455.9	.....	.....	174.5
December ..	Maggie 6th	244.6	430.0	.....	.....	217.0
December ..	Rosette Ford	266.1	434.7	.....	.....	166.5
December ..	Oriole	200.9	347.0	.....	.....	14.5

FOOD FED COWS DURING EXPERIMENTS — (Continued).

	NAME.	Pounds hay.	Pounds ensilage.	Pounds green forage.	Pounds roots.	Pounds grain, mixed.
1891						
January	Esel 2d	247.3	929.7	.....	.....	279.0
January	Miss Flow 5th	230.7	862.5	.....	.....	34.0
January	Queen Duchess.	243.8	930.0	.....	.....	248.0
January	Manton Belle.	246.6	930.0	.....	.....	66.5
January	Countess Flavia	217.1	926.6	.....	.....	248.0
January	Barbara Allen.	216.9	868.0	.....	.....	217.0
January	Gilderbloom	184.2	868.0	.....	.....	217.0
January	Nellie 6th	142.8	743.9	.....	.....	186.0
January	Maggie 6th	154.1	744.0	.....	.....	186.0
January	Rosette Ford.	177.0	867.2	.....	.....	217.0
January	Oriole	186.0	731.3	.....	.....	53.0
February	Esel 2d	223.9	839.1	.....	.....	250.0
February	Queen Duchess.	223.3	839.9	.....	.....	224.0
February	Manton Belle	223.6	839.9	.....	.....	172.5
February	Junietta Peerless	104.0	311.8	.....	.....	12.5
February	Countess Flavia	168.8	776.7	.....	.....	224.0
February	Barbara Allen	194.9	783.8	.....	.....	196.0
February	Gilderbloom	244.7	784.0	.....	.....	196.0
February	Nellie 6th	123.0	665.4	.....	.....	168.0
February	Maggie 6th	139.2	671.5	.....	.....	168.0
February	Rosette Ford.	167.4	783.7	.....	.....	196.0
February	Oriole	168.0	710.0	.....	.....	145.0
March	Esel 2d	247.9	929.7	.....	.....	279.0
March	Queen Duchess.	248.0	929.9	.....	.....	248.0
March	Manton Belle.	248.0	930.0	.....	.....	217.0

March	Junietta Peerless	186.0	744.0	.....	.....	68.5
March	Countess Flavia	216.1	860.1	.....	.....	248.0
March	Barbara Allen	216.9	867.8	.....	.....	217.0
March	Gilderbloom	181.0	847.6	.....	.....	208.9
March	Nellie 6th	98.9	620.7	.....	.....	186.0
March	Maggie 6th	155.0	743.8	.....	.....	186.0
March	Rosette Ford	185.9	868.0	.....	.....	217.0
March	Oriole	185.9	841.0	.....	.....	210.5
March	Ione	116.7	471.9	.....	.....	27.0
April	Esel 2d	389.4	449.6	.....	.....	270.0
April	Queen Duchess	388.3	450.0	.....	.....	240.0
April	Manton Belle	390.0	450.0	.....	.....	210.0
April	Junietta Peerless	298.4	360.0	.....	.....	137.5
April	Countess Flavia	323.9	418.6	.....	.....	215.0
April	Barbara Allen	298.9	419.5	.....	.....	210.0
April	Gilderbloom	274.8	365.1	.....	.....	162.0
April	Nellie 6th	208.7	263.5	.....	.....	180.0
April	Maggie 6th	239.2	359.2	.....	.....	180.0
April	Rosette Ford	399.9	420.0	.....	.....	210.0
April	Oriole	300.0	420.0	.....	.....	210.0
April	Ione	291.4	358.0	.....	.....	120.0
May	Esel 2d	248.0	829.6	.....	.....	279.0
May	Queen Duchess	248.0	930.0	.....	.....	248.0
May	Manton Belle	226.0	863.3	.....	.....	205.5
May	Junietta Peerless	186.0	744.0	.....	.....	185.0
May	Countess Flavia	185.9	866.8	.....	.....	185.0
May	Barbara Allen	181.9	830.3	.....	.....	193.5
May	Gilderbloom	154.5	744.0	.....	.....	183.0
May	Nellie 6th	121.0	525.7	.....	.....	186.0
May	Maggie 6th	147.3	743.4	.....	.....	186.0
May	Rosette Ford	185.9	868.0	.....	.....	217.0
May	Oriole	182.2	867.9	.....	.....	213.5

REPORT OF THE DIRECTOR OF THE

FOOD FED COWS DURING EXPERIMENTS — (Continued).

	NAME.	Pounds hay.	Pounds ensilage.	Pounds green forage.	Pounds roots.	Pounds grain, mixed.
1891						
May	Ione	184.8	715.6	.....	.....	181.0
May	Genevie's Gift.	59.9	276.0	.....	.....	8.0
June	Esel 2d.	240.0	213.0	721.8	.....	270.0
June	Queen Duchess.	240.0	213.0	720.6	.....	240.0
June	Manton Belle	240.0	198.0	716.3	.....	189.5
June	Junietta Peerless.	180.0	168.0	665.5	.....	180.0
June	Countess Flavia.	180.0	196.7	636.3	.....	180.0
June	Barbara Allen.	180.0	198.0	647.3	.....	210.0
June	Gilderbloom.	150.0	168.0	624.1	.....	180.0
June	Nellie 6th.	116.9	116.9	491.1	.....	.3
June	Maggie 6th.	150.0	168.0	555.1	.....	180.0
June	Rosette Ford.	180.0	198.0	642.3	.....	210.0
June	Oriole	178.3	198.0	641.2	.....	210.0
June	Ione.	179.6	156.2	628.6	.....	180.0
June	Genevie's Gift.	149.8	167.8	589.0	.....	72.5
July	Esel 2d.	120.0	502.0	745.3	.....	279.0
July	Queen Duchess	120.0	501.9	745.6	.....	248.0
July	Manton Belle.	120.0	502.0	744.9	.....	209.5
July	Junietta Peerless	90.0	406.0	699.9	.....	186.0
July	Countess Flavia.	90.0	468.6	654.1	.....	186.0
July	Barbara Allen	90.0	470.0	667.5	.....	217.0
July	Gilderbloom.	75.0	470.0	666.0	.....	186.0
July	Nellie 6th	55.6	305.0	522.7	.....	112.0
July	Maggie 6th	75.0	406.0	577.9	.....	186.0
July	Rosette Ford	90.0	470.0	668.7	.....	217.0

July	Oriole	90.0	470.0	667.9	217.0
July	Ione	90.0	467.5	664.5	186.0
July	Genevieve's Gift	74.8	405.8	605.0	119.5
August	Esel 2d		979.9	554.0	279.0
August	Queen Duchess		928.0	536.2	248.0
August	Manton Belle		928.0	534.9	217.0
August	Junietta Peerless		812.0	504.8	186.0
August	Countess Flavia		869.7	490.5	186.0
August	Barbara Allen		870.0	502.4	217.0
August	Gilderbloom		870.0	499.7	186.0
August	Nellie 6th		541.3	363.3	124.0
August	Maggie 6th		751.4	435.6	186.0
August	Rosette Ford		870.0	501.2	217.0
August	Oriole		870.0	503.8	217.0
August	Ione		854.3	501.2	186.0
August	Genevieve's Gift		754.0	432.1	124.0
September	Esel 2d	238.5		1,044.4	270.0
September	Queen Duchess	239.0		956.8	206.5
September	Manton Belle	239.2		959.9	210.0
September	Junietta Peerless	179.7		813.1	180.0
September	Countess Flavia	176.5		799.1	137.0
September	Barbara Allen	178.2		878.6	210.0
September	Gilderbloom	145.7		824.9	180.0
September	Nellie 6th	102.1		574.9	120.0
September	Maggie 6th	148.8		769.2	176.7
September	Rosette Ford	179.9		889.9	210.0
September	Oriole	179.5		862.7	214.5
September	Ione	170.7		926.6	180.0
September	Genevieve's Gift	144.5		765.4	119.9
October	Esel 2d	421.5		627.0	279.0
October	Queen Duchess	450.0		406.0	29.0
October	Manton Belle	422.4		560.0	191.5
				47.0	

FOOD FED COWS DURING EXPERIMENTS — (Concluded).

	NAME.	Pounds hay.	Pounds ensilage.	Pounds green forage.	Pounds roots.	Pounds grain, mixed.
October	Junietta Peerless	307.0	...	467.0	...	186.0
October	Countess Flavia	400.2	...	297.0	42.7	10.0
October	Barbara Allen	315.3	...	546.6	...	210.0
October	Gilderbloom	250.2	...	463.5	...	186.0
October	Maggie 6th	263.8	...	466.0	...	186.0
October	Rosette Ford	316.7	...	546.6	...	217.0
October	Oriole	317.7	...	546.6	...	232.5
October	Ione	310.8	...	559.0	...	186.0
October	Genevie's Gift	258.7	...	466.8	...	124.0
November	Esel 2d	359.4	723.8	...	94.0	270.0
November	Queen Duchess	38.0	...	...	...	...
November	Junietta Peerless	270.0	539.0	...	...	180.0
November	Manton Belle	360.0	624.9	...	84.0	150.5
November	Barbara Allen	270.0	599.0	...	...	210.0
November	Gilderbloom	205.3	538.9	...	...	165.0
November	Maggie, 6th	223.0	599.5	...	...	180.0
November	Rosette Ford	269.9	591.2	...	...	210.0
November	Oriole	269.7	629.0	...	...	225.0
November	Ione	264.3	645.9	...	...	180.0
November	Genevie's Gift	216.6	511.0	...	...	120.0
December	Esel 2d	244.7	1078.8	...	...	279.0
December	Junietta Peerless	186.0	744.0	...	...	186.0
December	Manton Belle	168.0	504.0	...	...	26.0

December ..	Gilderbloom	150.4	743.9	.....	.....	170.5
December ..	Barbara Allen	185.9	840.0	.....	.....	217.0
December ..	Maggie 6th	155.0	681.9	.....	.....	186.0
December ..	Rosette Ford	162.5	754.6	.....	.....	153.5
December ..	Oricle	184.3	868.0	.....	.....	232.5
December ..	Ione	177.5	816.8	.....	.....	186.0
December ..	Genevie's Gift	150.1	681.0	.....	.....	124.0

PROXIMATE CONSTITUENTS OF THE DRY MATTER IN FOODS FED COWS DURING EXPERIMENT.
Analysis of Cattle Foods, 1890-1891.

FOODS.	Time fed.	Water.	Ash.	Albuminoids.	Crude fiber.	Nitrogen free extract.	Fat.	Invert sugar.	Sucrose.	Starch.	Albuminoid nitrogen.	Amide nitrogen.	Pure fat in dry matter.
Oat hay.....	February 6 to 17.....	13.90	6.87	7.00	36.83	46.15	3.14	0.94	0.64	27.84	1.04	0.08	1.96
Mixed hay.....	February 18 to May 31.....	11.06	6.65	12.13	33.31	44.68	3.63	4.96	1.28	24.40	1.07	0.69	2.18
Beet roots.....	February 6 to March 2.....	86.92	9.66	8.52	8.73	72.52	0.57	6.90	40.92	4.37	0.74	0.31	0.32
Mixed grain, No. 6.....	February 6 to September 30.....	10.61	5.22	23.28	9.78	56.38	5.34	0.61	1.31	36.18	0.79	0.52	4.92
Corn ensilage.....	March 3 to 30.....	69.22	3.12	8.18	19.68	63.37	5.65	10.72	1.36	38.04	0.84	0.69	3.39
Mixed roots.....	April 1 to 30.....	87.53	7.38	9.54	7.06	74.50	1.52	0.60	0.92	39.28	0.83	0.97	2.69
Corn ensilage.....	May 1 to June 30.....	73.26	4.41	11.22	21.24	53.65	4.48	0.60	0.92	36.06	0.83	0.97	2.69
Kentucky blue grass hay.....	June 1 to 98.....	13.53	7.61	9.56	33.50	44.65	4.68	2.78	1.28	17.08	1.26	0.27	2.81
Mixed hay.....	July 1 to September 30.....	11.06	6.65	12.13	33.31	44.68	3.63	4.96	1.28	24.40	1.07	0.87	2.18
Red clover forage.....	July 1 to 10.....	73.85	6.51	13.19	31.32	44.36	4.62	3.80	1.52	10.79	1.74	0.37	2.77
Oat and vetch forage.....	July 11 to 31.....	67.01	5.25	10.31	30.50	50.03	3.91	4.16	3.32	19.92	1.56	0.09	2.35
Oat and pea forage.....	August 1 to 16.....	74.53	5.14	11.69	23.98	48.60	4.51	4.72	2.72	18.60	1.89	0.93	2.71
Sorghum ensilage.....	August 17 to September 25.....	80.45	4.90	12.94	22.94	54.32	4.90	18.95	14.32	17.47	1.38	0.66	2.52
Corn forage.....	September 26 to October 10.....	77.11	6.98	10.12	25.67	53.52	4.71	10.64	2.80	21.18	1.16	0.46	2.83
Beet roots.....	October 11 to 20.....	88.98	8.68	13.56	7.18	69.36	1.24	6.05	2.32	00.00	1.95	0.22	0.71
Mixed hay.....	October 21 to November 30.....	14.43	6.29	10.44	33.35	44.69	4.63	4.04	0.92	57.90	1.36	0.31	2.67
Clover hay.....	October 1 to November 30.....	12.83	3.58	17.19	8.89	65.06	5.56	2.48	0.80	16.90	2.03	0.72	4.86
Mixed grain, No. 11.....	December 1 to February 15.....	11.40	7.48	14.56	29.13	40.08	7.56	1.64	0.00	10.80	1.68	0.65	4.62
Clover ensilage.....	December 1 to 30.....	77.23	7.70	14.56	35.11	41.07	3.51	1.00	2.00	54.36	2.16	0.03	3.22
Mixed grain, No. 13.....	December 1 to January 31, 1891.....	13.58	3.50	13.19	7.43	71.87	6.68	1.28	0.60	29.92	1.11	1.00	4.00
Corn ensilage.....	January 1 to February 16.....	80.18	4.60	13.19	23.93	51.60	5.07	3.52	1.68	11.58	1.79	0.32	3.04
Clover and Timothy hay.....	February 16 to May 30.....	15.76	6.63	13.25	35.08	39.37	5.07	6.04	4.52	0.00	1.96	0.22	0.70
Beet roots.....	February 16 to 28.....	88.98	8.68	13.56	7.16	69.36	1.24	6.04	4.52	0.00	1.96	0.22	0.70
Corn ensilage.....	March 1 to June 15.....	80.16	4.60	13.19	23.93	51.60	5.07	3.52	1.68	11.58	1.79	0.32	3.04
Mixed grain, No. 14.....	March 1 to 30.....	14.97	5.36	22.02	9.86	61.01	5.69	1.75	0.90	57.71	2.85	0.21	4.86
Mixed grain, No. 16.....	April 1 to May 31.....	13.50	5.04	19.12	9.14	61.01	5.69	1.75	0.90	57.71	2.85	0.21	4.86
Mixed hay.....	June 1 to 30.....	10.08	6.51	11.38	36.80	40.20	6.11	4.24	3.76	12.71	1.91	1.85	3.54
Alfalfa forage.....	June 1 to 30.....	71.86	8.54	23.50	25.83	36.23	6.28	1.20	1.71	61.72	2.60	0.00	5.72
Mixed grain, No. 17.....	June 1 to July 31.....	11.50	3.48	16.25	5.29	68.52	4.83	4.56	1.44	15.48	1.62	1.30	2.90
Mixed hay.....	July 1 to 15.....	11.39	5.74	17.62	33.23	38.78	6.68	1.28	0.60	29.92	1.11	1.00	4.01
Corn ensilage.....	July 16 to August 29.....	80.16	4.60	13.19	23.93	51.60	5.07	3.52	1.68	11.58	1.79	0.32	3.04
Oat and pea forage.....	July 1 to 15.....	77.75	8.26	15.87	30.46	39.90	5.51	4.40	0.00	19.40	1.66	0.88	3.31
Alfalfa forage.....	July 16 to August 15.....	71.86	8.54	23.50	25.83	36.23	6.28	1.20	1.71	61.72	2.60	0.00	5.72

	74.65	9.97	9.63	28.67	46.58	5.15	1.13	0.22	23.31	1.29	0.25	3.09
Timothy rowen forage...	9.88	5.15	20.00	7.35	61.84	5.65	1.04	2.57	45.68	2.82	0.38	5.15
Mixed grain, No. 19.....	13.15	5.27	10.44	28.38	53.22	2.69	1.05	0.26	19.66	1.55	0.12	1.61
Mixed hay.....	74.12	7.25	16.31	26.13	46.57	3.74	1.13	0.34	21.78	2.05	0.56	2.24
Barley and pea forage...	74.53	11.16	20.36	25.39	39.59	3.48	0.65	0.09	11.90	2.68	0.58	2.09
Alfalfa forage.....	69.88	3.19	7.00	19.89	67.01	3.21	0.56	5.53	30.91	1.09	0.04	1.93
Corn forage.....	11.69	4.49	18.00	9.19	63.35	4.97	0.00	2.56	54.56	2.68	0.20	4.52
Mixed grain, No. 21.....	76.81	4.13	10.94	1.90	82.78	0.25	0.00	1.82	59.05	0.81	0.94	0.15
Potatoes.....	69.55	3.76	7.56	18.65	66.95	3.07	3.55	0.17	28.90	1.08	0.13	1.84
Corn ensilage.....	86.78	10.56	13.25	6.42	68.52	1.25	6.25	37.95	2.20	1.10	1.02	0.70
Beets.....	12.78	5.72	16.81	8.05	66.13	3.29	0.40	6.22	44.70	2.64	0.05	2.96
Wheat bran.....	12.90	6.90	11.05	34.52	45.21	2.91	0.38	0.58	19.30	3.70	0.07	1.75
Mixed hay.....	13.62	5.44	21.33	8.61	58.79	5.78	0.24	4.88	47.00	3.32	0.10	5.26
Mixed grain, No. 23.....	12.61	3.17	10.81	12.24	69.09	4.69	0.40	1.92	49.20	1.71	0.02	4.22
Ground oats.....												

COMPOSITION BY WEIGHT OF GRAIN MIXTURES.

	Cotton-seed meal.	Corn meal.	Wheat bran.	Ground oats.	Linseed meal, old process.	Linseed meal, new process.	Wheat middlings.	Gluten meal.	Cost per ton.
Number 6.....	1	5	4	5	.....	.....	.....	\$23 50
Number 11.....	5	1	5	1	.....	.....	.....	22 63
Number 13.....	5	2	4	1	.....	.....	.....	22 21
Number 14.....	1	3	1	1	.....	.....	.....	21 92
Number 16.....	3	6	.....	2	.....	.....	.....	21 18
Number 17.....	5	4	4	.....	.....	.....	2	22 27
Number 19.....	5	5	.....	.....	3	2	.....	21 30
Number 21.....	3	7	5	3	.....	.....	.....	22 47
Number 23.....	2	.....	6	5	2	.....	.....	.....	23 67

The following tables give the amounts in pounds of each of the food constituents in the food consumed by each of the animals, as also the weight of each animal during each month of lactation :

ESEL 2D—HOLSTEIN-FRIESIAN.

Calved July 16, 1890.

MONTH.	Weight.	Albuminoids.	Nitrogen free extract.	Starch and sugar.	Crude fat.	Fiber.	Ash.
July.....	1,243	26.94	102.2	64.1	8.4	54.9	11.0
August.....	958	75.63	324.6	206.6	29.0	130.9	35.6
September.....	978	76.85	339.0	225.1	28.5	127.6	34.1
October.....	1,042	64.50	348.6	248.5	30.3	137.7	32.9
November.....	1,018	64.62	339.5	227.8	27.8	132.4	33.9
December.....	1,051	67.94	373.9	251.4	29.9	166.8	40.4
January.....	1,053	60.00	416.5	299.1	27.3	143.9	33.9
February.....	1,033	66.25	339.7	249.2	29.1	130.2	33.7
March.....	1,044	77.87	374.6	264.6	33.1	138.4	36.5
April.....	1,066	84.44	344.1	245.8	35.3	162.0	38.8
May.....	1,070	77.69	315.7	237.8	35.2	134.8	33.6
June.....	1,107	87.62	346.4	237.3	42.9	152.5	41.6
July.....	1,123	79.75	358.1	257.8	35.8	130.1	35.8
August.....	1,080	77.69	369.7	273.6	32.2	117.3	38.5
September.....	1,117	102.00	377.3	213.6	29.1	145.9	47.6
October.....	1,129	89.81	477.4	287.4	28.2	163.5	36.4
November.....	1,212	85.25	464.6	273.5	27.1	151.6	35.4
December.....	1,221	92.94	476.1	277.3	29.8	142.4	36.6

QUEEN DUCHESS — AYRESHIRE.

Calved July 24, 1890.

MONTH.	Weight.	Albuminoids.	Nitrogen free extract.	Starch and sugar.	Crude fat.	Fiber.	Ash.
July	904	8.62	40.4	26.1	3.3	21.9	4.6
August	778	57.50	253.0	161.1	22.5	104.1	28.0
September	760	46.25	238.3	163.1	20.5	96.3	24.9
October	765	53.31	287.9	200.7	25.1	118.2	27.9
November	741	55.06	289.6	188.5	23.8	118.7	29.9
December	755	59.43	327.9	222.4	27.3	157.1	37.3
January	756	56.19	395.9	282.8	26.5	141.0	32.8
February	756	62.19	326.9	237.5	27.9	127.9	32.5
March	756	73.25	359.5	182.1	31.7	135.8	35.2
April	783	79.69	328.0	229.5	33.7	159.3	37.4
May	804	74.31	309.6	227.4	35.1	137.1	33.1
June	826	82.62	328.1	222.7	41.2	151.0	40.7
July	837	75.25	339.3	249.9	34.1	128.6	34.9
August	835	71.37	342.2	252.5	29.8	110.8	36.0
September	903	88.81	332.2	180.9	25.1	136.0	42.8
October	922	56.50	315.8	150.1	15.7	137.2	25.7

JUNIETTA PEERLESS.—AYRSHIRE.
Calved February 4, 1891.

MONTH.	Weight.	Albuminoids.	Nitrogen free extract.	Starch and sugar.	Crude fat.	Fiber.	Ash.
February	911	13.20	69.4	50.9	7.2	37.3	12.6
March	743	37.60	219.6	82.1	19.0	94.7	21.5
April	746	54.20	229.7	152.5	23.7	119.4	26.9
May	783	56.25	236.4	173.0	26.9	104.9	25.2
June	807	66.25	259.6	174.8	33.1	122.7	33.6
July	853	60.75	272.1	193.3	27.8	108.0	29.3
August	834	57.62	286.2	209.4	25.0	97.5	31.0
September	892	74.06	274.3	152.0	21.0	110.2	35.3
October	881	63.06	340.2	201.6	19.9	118.3	25.9
November	934	62.62	335.3	193.3	19.3	111.8	25.7
December	925	64.44	333.1	191.5	20.6	101.9	25.7

MANTON BELLE — AYRESHIRE.
Calved December 11, 1890.

MONTH.	Weight.	Albuminoids.	Nitrogen free extract.	Starch and sugar.	Crude fat.	Fiber.	Ash.
December	1,123	21.25	122.0	73.4	12.8	90.6	16.8
January	976	35.12	284.3	193.6	21.0	130.2	27.4
February	886	54.44	301.7	214.0	25.6	123.7	30.2
March	896	68.50	344.4	167.9	30.3	133.2	33.7
April	916	75.31	312.7	213.6	32.3	157.4	36.2
May	938	64.81	272.9	197.2	31.1	124.0	29.4
June	929	75.06	295.4	197.1	38.2	147.6	38.8
July	973	69.75	315.8	224.2	32.0	126.8	33.7
August	956	66.31	324.8	238.7	28.2	108.7	35.5
September	1,013	89.50	334.5	182.6	25.3	136.5	43.0
October	1,053	75.56	415.3	235.9	23.7	152.7	32.3
November	1,116	65.56	377.9	203.5	20.9	136.4	29.6
December	1,126	39.12	264.5	128.2	12.4	93.3	23.2

Miss Flow 5th — AYRSHIRE.

Calved February 5, 1890.

MONTH.	Weight.	Albuminoids.	Nitrogen free extract.	Starch and sugar.	Crude fat.	Fiber.	Ash.
February	948	24.37	152.4	70.7	9.3	62.6	13.5
March.....	736	53.19	263.3	167.7	22.9	133.9	26.0
April.....	803	55.00	282.0	163.9	21.8	138.3	29.1
May	800	72.63	362.1	224.5	31.1	167.9	35.1
June	859	69.00	342.3	214.6	31.6	128.3	36.6
July	872	80.00	312.3	192.5	28.0	142.9	35.1
August.....	866	75.63	317.3	203.8	28.5	125.5	34.9
September.....	874	55.00	270.2	175.4	23.5	107.5	28.5
October	916	53.06	287.1	200.9	25.0	117.5	27.8
November	902	55.12	289.8	166.4	23.8	118.9	30.0
December	937	58.62	322.0	214.6	26.9	152.7	36.5
January	984	29.43	247.1	166.4	18.8	119.5	24.7

GILDERBLOOM—JERSEY.

Calved September 9, 1890.

MONTH.	Weight.	Albuminoids.	Nitrogen free extract.	Starch and sugar.	Crude fat.	Fiber.	Ash.
September	860	22.62	124.7	87.9	10.8	54.2	13.9
October	770	49.56	267.8	190.6	23.1	104.3	25.3
November	734	44.24	265.5	178.7	21.3	100.4	26.5
December	744	52.81	287.4	196.4	23.5	126.9	31.1
January	736	48.19	343.5	244.9	22.9	117.8	27.6
February	763	53.00	282.8	206.0	24.0	106.8	27.3
March	766	66.25	302.5	212.5	26.4	111.1	28.9
April.....	781	55.81	235.3	162.9	24.0	114.7	26.7
May	785	52.94	224.8	164.4	25.4	95.5	23.4
June	787	62.25	244.6	166.0	30.8	110.0	30.8
July	821	59.94	273.9	199.9	27.4	105.1	28.7
August	827	59.37	294.6	215.9	25.5	100.6	31.5
September.....	885	71.44	260.3	145.9	20.3	102.6	33.8
October	879	58.25	313.2	192.0	18.5	104.1	23.3
November	885	52.87	297.0	170.1	17.1	94.6	23.1
December	925	58.62	308.6	178.0	19.0	92.0	23.4

Calved April 19, 1890.

MONTH.	Weight.	Albuminoids.	Nitrogen free extract.	Starch and sugar.	Crude fat.	Fiber.	Ash.
April.....	788	12.10	61.5	39.3	4.7	32.4	8.0
May.....	695	50.63	299.3	185.9	25.6	141.2	28.9
June.....	696	68.13	206.6	191.8	28.5	76.3	23.1
July.....	693	75.00	288.3	181.1	26.0	126.5	32.3
August.....	673	73.13	304.3	197.0	27.4	118.9	33.5
September.....	700	60.00	282.0	193.8	24.6	109.4	29.8
October.....	724	54.37	294.2	212.6	25.3	111.2	27.1
November.....	712	56.25	295.4	200.3	24.0	112.5	29.3
December.....	714	59.06	323.4	223.1	25.9	141.4	34.5
January.....	736	54.56	384.9	275.2	25.6	132.7	31.2
February.....	750	57.69	285.8	217.4	25.3	108.8	28.5
March.....	756	69.00	336.7	238.8	29.7	123.9	32.7
April.....	771	69.37	288.2	203.8	29.4	146.5	32.4
May.....	789	57.94	249.0	180.7	28.5	110.7	26.3
June.....	789	65.69	259.6	174.9	33.0	122.0	33.1
July.....	800	60.81	277.7	198.3	27.8	108.6	29.2
August.....	801	59.19	293.6	215.3	25.4	99.9	31.3
September.....	849	66.12	247.8	132.4	18.6	105.7	32.6
October.....	838	46.69	259.3	80.2	18.5	117.0	21.6

BARBARA ALLEN—JERSEY.

Calved August 29, 1890.

MONTH.	Weight.	Albuminoids.	Nitrogen free extract.	Starch and sugar.	Crude fat.	Fiber.	Ash.
August.....	853	1.62	11.8	7.9	0.9	5.2	0.6
September.....	862	37.50	204.9	140.8	17.5	87.5	21.8
October.....	763	49.06	264.9	185.6	22.9	106.1	25.4
November.....	779	52.94	278.4	184.4	22.6	110.2	28.3
December.....	779	55.75	306.4	209.3	25.1	141.2	34.0
January.....	770	50.12	356.4	243.9	23.9	127.5	29.5
February.....	782	55.06	283.5	212.5	25.0	114.6	29.0
March.....	779	65.02	323.1	224.7	28.5	121.9	31.4
April.....	792	66.19	277.3	187.1	28.1	128.8	30.8
May.....	812	58.37	248.4	182.4	28.2	108.5	26.2
June.....	805	70.44	279.1	190.2	34.9	124.2	34.3
July.....	825	65.69	298.0	217.9	29.7	111.1	30.5
August.....	795	64.37	312.2	229.9	27.2	102.8	33.0
September.....	871	81.25	297.4	167.7	23.1	116.1	38.3
October.....	861	69.00	373.5	224.3	21.9	127.0	28.0
November.....	913	66.25	364.3	214.5	21.2	117.6	27.5
December.....	913	71.94	368.5	215.0	23.1	109.7	28.3

NELLIE 6TH --- AMERICAN HOLDERNESS.

Calved September 13, 1890.

MONTH.	Weight.	Albuminoids.	Nitrogen free extract.	Starch and sugar.	Crude fat.	Fiber.	Ash.
September.....	918	12.94	75.9	54.8	6.4	30.5	6.9
October.....	756	40.75	220.0	156.9	18.8	85.0	21.0
November.....	757	47.87	252.1	168.1	20.2	97.5	25.6
December.....	765	44.44	238.4	159.8	20.3	107.2	26.4
January.....	756	40.44	288.5	205.9	19.1	96.5	21.8
February.....	770	43.87	233.6	171.4	19.8	80.7	22.3
March.....	769	45.87	225.3	164.6	19.6	75.7	20.9
April.....	765	57.25	206.6	153.0	20.9	90.9	22.6
May.....	783	47.31	192.7	150.5	21.3	75.4	19.6
June.....	785	28.31	104.3	59.9	16.1	78.9	19.7
July.....	775	40.69	183.2	129.4	18.8	76.1	20.5
August.....	793	39.69	193.7	141.2	17.1	66.9	21.3
September.....	855	49.37	177.7	98.7	13.8	71.1	23.8
October.....	873	34.81	202.5	111.6	11.2	75.5	15.4

MAGGIE 6TH — AMERICAN HOLDERNESS.
Calved September 25, 1890.

MONTH.	Weight.	Albuminoids.	Nitrogen free extract.	Starch and sugar.	Crude fat.	Fiber.	Ash.
September	912	4.81	25.6	22.6	2.2	14.2	2.7
October	777	41.93	226.3	157.3	19.5	91.7	22.0
November	726	49.37	259.7	176.6	20.7	97.1	25.9
December	745	55.31	291.8	192.6	25.7	129.4	32.4
January	730	41.06	292.9	208.9	19.5	99.9	23.4
February	721	45.19	240.8	175.7	20.5	90.5	23.3
March	733	52.75	265.6	187.0	23.2	96.7	25.3
April	757	55.19	231.9	167.0	23.3	105.3	25.4
May	763	52.75	223.9	168.0	25.2	93.5	23.1
June	800	59.94	237.6	162.0	29.6	105.0	29.2
July	796	56.37	255.7	183.9	25.5	95.1	26.2
August	805	55.44	269.0	198.0	23.4	88.8	28.5
September	855	69.25	253.2	142.6	19.7	99.4	32.8
October	850	59.44	319.9	193.8	18.8	107.5	23.9
November	891	55.81	305.5	180.8	17.8	98.0	23.0
December	907	67.81	306.1	185.9	19.3	90.8	23.6

ROSETTE FORD — GUERNSEY.

Calved November 14, 1890.

MONTH.	Weight.	Albuminoids.	Nitrogen free extract.	Starch and sugar.	Crude fat.	Fiber.	Ash.
November	999	15.56	82.9	42.4	6.9	45.1	10.4
December	851	46.19	248.8	167.4	21.1	118.3	2.84
January	841	45.00	309.2	222.6	20.2	104.3	27.2
February	849	55.00	282.9	188.7	24.0	107.1	27.5
March	842	61.94	311.5	150.6	27.2	114.1	29.8
April	852	75.81	311.4	212.0	32.4	158.6	36.4
May	862	62.81	266.0	198.0	30.1	113.3	27.7
June	873	70.25	278.6	189.9	34.8	123.9	34.2
July	885	65.69	298.2	214.2	29.8	111.1	30.5
August	876	64.37	312.0	229.8	27.1	102.7	33.0
September	923	81.81	299.4	168.7	23.2	117.2	38.6
October	899	70.12	378.0	228.0	22.2	127.9	28.4
November	950	66.06	362.7	213.8	21.1	117.2	27.4
December	943	56.81	307.7	173.6	18.5	94.3	23.2

ORIOLE — GUERNSEY.

Calved December 7, 1890.

MONTH.	Weight.	Albuminoids.	Nitrogen free extract.	Starch and sugar.	Crude fat.	Fiber.	Ash.
December	867	20.12	112.6	68.7	11.6	77.7	15.0
January	686	27.25	220.9	149.5	16.3	90.0	21.1
February	627	44.41	246.7	158.2	21.0	98.7	24.4
March	624	60.62	304.1	147.7	26.6	112.1	29.2
April	649	66.37	277.7	197.8	28.1	129.1	30.8
May	668	61.94	262.9	195.6	29.7	111.9	27.4
June	692	70.00	277.9	189.5	34.7	123.2	34.1
July	697	65.69	298.1	214.2	29.7	111.1	30.5
August	682	64.44	312.3	229.9	27.2	102.9	33.1
September	737	81.50	298.6	169.1	23.2	115.6	38.2
October	739	72.50	387.1	236.0	22.9	129.4	29.0
November	788	69.06	378.7	235.0	22.1	120.5	28.4
December	777	75.06	381.4	224.4	24.1	112.0	29.3

IONE — DEVON.
Calved March 7, 1891.

MONTH.	Weight.	Albuminoids.	Nitrogen free extract.	Starch and sugar.	Crude fat.	Fiber.	Ash.
March	842	18.94	99.1	58.9	9.7	52.9	11.6
April	713	48.44	189.9	124.2	20.5	105.9	23.6
May	722	55.06	231.0	168.9	26.2	102.9	24.7
June	741	64.81	254.5	171.9	32.3	119.3	32.6
July	758	63.00	278.5	198.7	27.9	109.2	29.4
August	779	59.12	292.3	214.2	25.4	99.7	31.4
September	841	77.31	281.2	154.5	21.7	114.7	37.5
October	850	65.31	360.5	212.7	20.9	124.7	27.0
November	892	62.31	354.4	202.9	20.1	116.5	26.6
December	909	65.25	344.0	197.2	21.1	104.0	26.2

GENEVIE'S GIFT — DEVON.
Calved May 15, 1891.

MONTH.	Weight.	Albuminoids.	Nitrogen free extract.	Starch and sugar.	Crude fat.	Fiber.	Ash.
May	660	10.69	52.6	30.2	6.6	31.4	6.0
June	550	45.62	175.5	111.9	24.2	102.4	26.6
July	560	45.37	217.6	153.1	22.1	93.8	24.6
August	561	45.50	234.5	170.6	20.2	84.6	25.6
September	611	59.87	218.9	116.2	16.6	94.3	29.9
October	624	49.81	283.1	161.7	16.0	101.4	21.2
November	672	46.56	271.4	150.7	15.1	92.1	20.5
December	675	49.00	271.8	150.8	16.1	84.9	20.5

The following tables give the milk yield in pounds and its percentage composition, as also the pounds of each constituent present in the milk, for each cow and for each month of lactation:

FSEL 2D — HOLSTEIN FRIESIAN.

Calved July 16, 1890.

MONTH.	Milk yield, pounds.	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.
July.....	273.0	13.47	4.86	2.91	5.06	0.64	36.7	13.3	7.9	13.8	1.7
August.....	884.0	12.32	3.64	2.88	5.12	0.68	108.9	32.2	25.5	45.3	6.0
September...	895.0	12.26	3.86	2.83	4.89	0.68	109.7	34.5	25.3	43.8	6.1
October.....	780.6	12.36	3.64	3.05	4.96	0.71	97.5	28.4	23.8	38.7	5.5
November...	750.5	12.62	3.66	3.17	5.31	0.48	94.7	27.5	23.8	39.8	3.6
December...	725.1	12.92	3.92	3.58	4.66	0.76	93.7	28.4	26.0	33.8	5.5
January....	790.1	13.12	3.55	2.94	5.85	0.73	103.7	28.0	23.2	46.2	6.2
February...	655.8	13.32	3.73	2.93	5.93	0.73	87.3	24.5	19.2	38.9	4.8
March.....	638.1	13.81	3.91	3.67	5.49	0.74	88.1	24.9	23.4	35.0	4.7
April.....	544.7	14.33	3.95	4.01	5.52	0.85	78.1	21.5	21.8	30.1	4.6
May.....	560.6	13.60	3.72	3.98	5.22	0.68	76.2	20.8	22.3	29.3	3.8
June.....	683.0	13.26	3.20	3.74	5.55	0.77	90.6	21.9	25.5	37.9	5.3
July.....	741.6	12.40	2.99	3.86	4.86	0.69	91.9	22.2	28.6	36.0	5.1
August.....	662.0	12.35	2.92	3.68	5.00	0.75	81.8	19.3	24.4	33.1	5.0
September...	612.9	12.64	3.87	4.29	3.75	0.73	77.5	23.7	26.3	23.0	4.5
October.....	617.2	12.89	3.30	4.22	4.59	0.78	79.5	20.4	26.0	28.3	4.8
November...	563.8	12.96	3.11	3.92	5.11	0.82	73.0	17.5	22.1	28.8	4.6
December...	540.3	12.67	2.80	3.39	5.72	0.76	68.4	15.1	18.3	30.9	4.1

QUEEN DUCHESS — AYRSHIRE.

Calved July 24, 1890.

MONTH.	Milk yield, pounds.	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.
July	99.7	13.51	3.96	3.60	5.19	0.76	13.5	3.9	3.6	5.2	0.8
August	805.7	13.55	4.35	3.13	5.35	0.72	109.2	35.0	25.2	43.1	5.8
September ..	671.1	13.31	4.48	2.91	5.25	0.67	89.3	30.1	19.5	35.2	4.5
October	701.6	12.77	3.91	3.06	5.07	0.73	89.6	27.4	21.5	35.6	5.1
November ...	657.8	12.97	3.95	3.54	4.92	0.56	85.3	26.0	23.3	32.4	3.7
December ...	703.9	13.47	3.78	3.38	5.59	0.72	94.8	26.6	23.8	39.3	5.1
January	747.1	13.45	3.60	2.95	6.10	0.80	100.5	26.9	22.0	45.6	6.0
February ...	649.0	13.29	3.31	3.08	6.16	0.74	86.2	21.5	20.0	40.0	4.8
March	702.2	13.42	3.86	3.55	5.36	0.65	94.2	27.1	24.9	37.6	4.6
April	662.4	13.13	3.72	3.43	5.26	0.72	87.0	24.6	22.7	34.8	4.8
May	690.6	13.19	3.67	3.56	5.31	0.65	91.1	25.3	24.6	36.7	4.4
June	680.9	13.40	3.60	3.50	5.53	0.77	91.2	24.5	23.8	37.7	5.2
July	673.5	13.30	3.72	3.76	5.09	0.73	89.6	25.1	25.3	34.3	4.9
August	558.0	14.28	4.13	3.79	5.57	0.79	79.7	23.0	21.2	31.1	4.4
September ..	363.3	14.46	3.95	4.47	5.26	0.78	52.5	14.4	16.2	19.1	2.8
October	122.4	16.34	5.30	5.63	4.79	0.62	20.0	6.5	6.9	5.9	0.7

JUNIETTA PEERLESS — AYRSHIRE.
Calved February 4, 1891.

MONTH.	Milk yield, pounds.	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.
February ...	193.5	12.82	3.05	3.32	5.81	0.64	24.8	5.9	6.4	11.2	1.2
March	453.5	12.14	2.97	3.13	5.36	0.68	55.0	13.5	14.2	24.3	3.1
April	462.6	12.09	2.94	2.87	5.56	0.72	55.9	13.6	13.3	25.7	3.3
May	512.4	12.16	2.86	3.55	5.07	0.68	62.3	14.6	18.2	26.0	3.5
June	487.0	11.99	2.78	3.12	5.42	0.67	58.4	13.5	15.2	26.4	3.3
July	488.9	12.14	2.72	3.51	5.21	0.70	59.4	13.3	17.2	25.5	3.4
August	486.1	12.34	2.91	3.32	5.46	0.65	59.9	14.1	16.1	26.5	3.2
September ..	427.1	12.49	3.12	3.29	5.26	0.82	53.3	13.3	14.0	22.5	3.5
October	435.8	12.72	3.09	4.04	4.88	0.71	55.4	13.5	17.6	21.2	3.1
November...	410.1	12.86	2.91	3.44	5.78	0.73	52.7	11.9	14.1	23.7	3.0
December...	434.9	13.16	2.93	2.99	6.59	0.65	57.2	12.7	13.0	28.7	2.8

MANTON BELLE — ARYSHIRE.
Calved December 11, 1890.

MONTH.	Milk yield, pounds.	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.
December...	327.8	13.32	4.00	3.42	5.17	0.73	43.7	13.1	11.2	16.9	2.4
January....	649.6	11.58	3.10	2.41	5.38	0.69	75.2	20.1	15.6	34.9	4.5
February....	655.4	11.80	2.82	3.01	5.28	0.69	77.3	18.5	19.7	34.6	4.5
March.....	714.2	12.60	3.63	3.13	5.33	0.51	90.0	25.9	22.3	38.1	3.6
April.....	688.8	12.59	3.40	3.03	5.51	0.65	86.7	23.4	20.9	37.9	4.5
May.....	664.5	12.39	3.28	3.10	5.41	0.60	82.3	21.8	20.6	35.9	4.0
June.....	652.1	11.82	3.36	3.07	4.77	0.62	77.0	21.9	20.0	31.1	4.0
July.....	657.3	12.12	3.22	3.27	5.00	0.63	79.7	21.2	21.5	32.9	4.1
August.....	588.7	12.49	3.42	3.29	5.16	0.62	73.5	20.1	19.4	30.4	3.6
September..	464.7	13.07	3.75	3.68	4.96	0.68	60.7	17.4	17.1	23.0	3.2
October....	385.0	13.58	3.83	4.29	4.80	0.66	52.3	14.7	16.5	18.5	2.5
November...	271.1	14.21	3.52	3.62	6.34	0.73	38.5	9.5	9.8	17.2	2.0
December...	76.6	14.44	3.67	4.21	5.74	0.82	11.2	2.8	3.3	4.5	0.6

MISS FLOW 5TH — AYRSHIRE.

Calved February 5, 1890.

MONTH.	Milk yield, pounds.	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.
February . . .	363.5	14.85	5.60	3.15	5.45	0.65	54.0	20.3	11.4	19.8	2.4
March	626.1	13.06	3.96	3.23	5.19	0.68	81.8	24.8	20.2	32.5	4.3
April	573.6	13.13	3.91	3.15	5.36	0.71	75.3	22.4	18.1	30.7	4.1
May	588.0	13.18	4.00	3.66	4.92	0.60	77.5	23.5	21.5	28.9	3.5
June	591.6	13.23	3.80	4.08	4.64	0.71	78.3	22.5	24.1	27.4	4.2
July	534.4	13.12	4.11	3.71	4.64	0.66	70.1	22.0	19.8	24.8	3.5
August	551.7	13.31	4.05	3.42	5.19	0.65	73.4	22.3	18.9	28.6	3.6
September . . .	449.5	14.33	4.37	3.55	5.62	0.79	64.4	19.6	15.9	25.3	3.6
October	431.5	13.96	4.34	3.59	5.33	0.70	60.2	18.7	15.5	23.0	3.0
November . . .	333.9	14.98	4.95	4.00	5.45	0.58	50.0	16.5	13.4	18.2	1.9
December . . .	173.9	15.81	4.80	4.48	5.69	0.84	27.5	8.3	7.8	9.9	1.5
January	33.5	17.56	5.67	5.62	5.34	0.93	5.9	1.9	1.9	1.8	0.3

GILDERBLOOM — JERSEY.

Calved September 9, 1890.

MONTH.	Milk yield, pounds.	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.
September ..	341.1	15.70	6.08	3.57	5.31	0.74	53.5	20.7	12.2	18.1	2.5
October	535.6	14.90	5.62	3.21	5.33	0.74	79.8	30.1	17.2	28.5	4.0
November ..	473.8	14.50	5.20	3.47	5.11	0.72	68.7	24.6	16.4	24.2	3.4
December...	410.7	15.56	6.16	3.47	5.15	0.78	63.9	25.3	14.2	21.1	3.2
January	428.4	15.51	5.47	3.43	5.80	0.81	66.4	23.3	14.4	25.2	3.5
February ...	343.3	15.19	5.37	3.41	5.60	0.81	52.1	18.4	11.7	19.2	2.8
March	342.0	15.68	5.68	4.06	5.26	0.68	53.6	19.4	13.9	18.0	2.3
April	307.1	15.46	5.62	3.88	5.14	0.82	47.5	17.3	11.9	15.8	2.5
May	356.8	14.83	5.38	4.01	4.88	0.56	52.9	19.2	14.3	17.4	2.0
June	315.5	15.03	5.60	3.97	4.75	0.71	47.4	17.7	12.5	15.0	2.2
July	301.0	14.41	4.91	4.00	4.75	0.75	43.4	14.8	12.0	14.3	2.3
August	255.5	14.66	4.97	4.21	4.72	0.76	37.5	12.7	10.8	12.1	1.9
September ..	204.5	15.26	5.41	4.14	4.93	0.78	31.2	11.0	8.5	10.1	1.6
October	182.2	16.26	6.22	4.95	4.33	0.76	29.6	11.3	9.0	7.9	1.4
November ..	155.9	16.31	5.87	4.26	5.41	0.77	25.4	9.2	6.6	8.4	1.2
December...	164.3	15.96	6.45	4.24	4.45	0.82	26.2	10.6	7.0	7.3	1.3

COUNTRESS FLAVIA — JERSEY.
Calved April 19, 1890.

MONTH.	Milk yield, pounds.	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.
April	171.8	14.99	5.26	3.81	5.16	0.76	25.7	9.0	6.5	8.9	1.3
May	627.7	14.33	4.84	3.89	4.84	0.76	89.9	30.3	24.4	30.4	4.8
June	614.5	14.91	5.32	4.13	4.68	0.78	91.6	32.7	25.4	28.8	4.8
July	580.5	14.90	5.36	3.78	5.02	0.74	86.5	31.1	21.9	29.1	4.3
August	574.0	14.81	5.37	3.70	5.00	0.74	85.0	30.8	21.2	28.7	4.2
September ..	492.4	16.15	6.12	4.04	5.26	0.73	79.5	30.1	19.9	25.9	3.6
October	474.1	15.89	6.00	3.84	5.26	0.79	75.3	28.4	18.2	24.9	3.7
November ..	442.7	16.41	6.41	3.99	5.19	0.82	72.6	28.4	17.6	23.0	3.6
December ..	448.9	16.48	6.19	4.16	5.40	0.73	74.0	27.8	18.7	24.2	3.3
January	449.8	17.03	6.45	4.00	5.76	0.82	76.6	29.0	18.0	25.9	3.7
February	365.8	16.89	6.35	4.22	5.52	0.80	61.8	23.2	15.4	20.2	2.9
March	409.8	16.99	6.66	4.79	4.79	0.75	69.6	27.3	19.6	19.6	3.1
April	409.6	16.99	6.30	4.39	5.58	0.72	69.6	25.8	18.0	22.9	2.9
May	421.7	16.74	5.87	4.48	5.64	0.75	70.6	24.8	18.9	23.8	3.2
June	406.2	16.95	5.87	4.43	5.90	0.75	68.8	23.8	18.0	24.0	3.0
July	408.1	16.42	5.89	4.08	5.68	0.77	67.0	24.0	16.7	23.2	3.1
August	377.9	16.84	6.32	4.37	5.46	0.69	63.6	23.9	16.5	20.6	2.6
September ..	261.9	18.95	8.07	4.44	5.55	0.89	49.6	21.1	11.6	14.6	2.3
October	87.0	17.94	6.30	5.66	5.11	0.87	15.6	5.5	4.9	4.4	0.8

REPORT OF THE DIRECTOR OF THE

BARBARA ALLEN—JERSEY.

Calved August 29, 1890.

MONTH.	Milk yield, pounds	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.
September ..	519.0	14.03	4.92	3.14	5.27	0.70	72.8	25.5	16.3	27.3	3.6
October	501.7	14.23	5.05	3.28	5.21	0.69	71.4	25.3	16.5	26.1	3.5
November ..	494.2	14.26	5.33	3.55	4.66	0.72	70.5	26.3	17.5	23.0	3.6
December...	450.6	15.23	5.55	3.71	5.25	0.72	68.6	25.0	16.7	23.7	3.2
January	495.2	15.33	5.70	3.16	5.75	0.72	75.9	28.2	15.6	28.5	3.6
February ...	409.9	15.37	5.48	3.72	5.38	0.79	63.0	22.5	15.2	22.0	3.2
March	437.4	15.29	5.39	4.18	4.99	0.73	66.9	23.6	18.3	21.8	3.2
April	418.1	14.91	5.46	4.00	4.75	0.70	62.3	22.8	16.7	19.9	2.9
May	432.8	15.14	5.34	4.01	5.01	0.78	65.5	23.1	17.4	21.7	3.4
June	468.3	14.84	4.89	3.80	5.46	0.69	69.5	22.9	17.8	25.6	3.2
July	471.7	14.63	5.15	3.94	4.82	0.72	69.0	24.3	18.6	22.7	3.4
August	444.0	14.80	5.52	3.94	4.66	0.68	65.7	24.5	17.5	20.7	3.0
September ..	337.1	15.47	5.58	3.90	5.24	0.75	52.1	18.8	13.1	17.7	2.5
October	367.4	15.92	5.41	4.81	4.92	0.78	58.5	19.9	17.7	18.1	2.8
November ..	340.7	16.21	6.16	4.10	5.23	0.72	55.2	21.0	14.0	17.8	2.4
December...	361.9	16.59	6.27	4.24	5.37	0.71	60.0	22.7	15.3	19.4	2.6

NELLIE 6TH — AMERICAN HOLDERNESS.

Calved September 13, 1890.

MONTH.	Milk yield, pounds.	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.
September ..	240.3	13.78	4.78	3.51	5.06	0.43	33.1	11.5	8.4	12.2	1.0
October	513.9	12.10	3.54	2.82	5.08	0.66	62.2	18.2	14.5	26.1	3.4
November...	531.9	12.06	3.35	3.23	4.85	0.63	64.1	17.8	17.2	25.8	3.4
December...	455.4	12.30	3.25	3.06	5.32	0.67	56.0	14.8	13.9	24.2	3.1
January	474.6	12.40	3.30	2.85	5.52	0.73	58.8	15.7	13.5	26.2	3.5
February ...	420.1	12.83	3.47	3.26	5.38	0.72	53.9	14.6	13.7	22.6	3.0
March	400.6	13.05	3.29	3.48	5.61	0.67	52.3	13.2	13.9	22.5	2.7
April	364.2	12.41	3.52	3.39	4.81	0.69	45.2	12.8	12.3	17.5	2.5
May	387.4	12.96	3.56	3.76	4.93	0.71	50.2	13.8	14.6	19.1	2.7
June	183.1	12.78	3.26	3.39	5.44	0.69	23.4	6.0	6.2	10.0	1.2
July	123.9	12.94	3.55	4.08	4.51	0.80	16.0	4.4	5.0	5.6	1.0

MAGGIE 6TH — AMERICAN HOLDERNESSE.

Calved September 25, 1890.

MONTH.	Milk yield, pounds.	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.
September ..	61.2	14.44	5.30	3.30	5.07	0.77	8.8	3.2	2.0	3.1	0.5
October.....	568.5	12.22	3.68	2.93	4.85	0.76	69.5	20.9	16.7	27.6	4.3
November...	585.3	11.82	3.36	3.17	4.56	0.73	69.2	19.7	18.5	26.7	4.3
December...	522.9	12.11	3.63	2.88	4.89	0.71	63.3	19.0	15.0	25.6	3.7
January.....	493.2	12.48	3.36	2.55	5.85	0.72	61.5	16.6	12.6	28.8	3.6
February ...	413.0	12.38	3.18	3.00	5.47	0.73	51.1	13.1	12.4	22.6	3.0
March	449.4	12.86	3.41	3.27	5.55	0.63	57.8	15.3	14.7	24.9	2.8
April	417.1	12.40	3.46	3.15	5.06	0.73	51.7	14.4	13.1	21.1	3.0
May	428.1	12.20	3.63	3.45	4.51	0.61	52.2	15.5	14.8	19.3	2.6
June	407.6	12.50	3.87	3.36	4.64	0.63	50.9	15.8	13.7	18.9	2.5
July	416.9	12.57	3.31	3.54	5.00	0.72	52.4	13.8	14.8	20.8	3.0
August	391.8	12.81	3.45	3.75	4.90	0.71	50.2	13.5	14.7	19.2	2.8
September ..	318.2	13.15	3.78	3.89	4.77	0.71	41.8	12.0	12.4	15.2	2.2
October	320.1	13.34	3.71	4.63	4.29	0.71	42.7	11.9	14.8	13.7	2.3
November...	267.7	14.03	3.60	3.60	6.15	0.68	37.5	9.6	9.6	16.5	1.8
December ...	121.3	15.26	4.75	3.80	5.86	0.85	18.5	5.8	4.6	7.1	1.0

ROSETTE FORD — GUERNSEY.

Calved November 14, 1890.

MONTH.	Milk yield, pounds.	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.
November ..	195.4	14.79	5.41	4.45	4.15	0.78	28.9	10.6	8.7	8.1	1.5
December...	543.4	14.63	5.30	3.20	5.41	0.72	79.5	28.8	17.4	29.4	3.9
January	561.5	14.04	4.74	3.09	5.49	0.72	78.8	26.6	17.3	30.8	4.0
February ...	482.3	14.20	4.90	3.48	5.10	0.72	68.5	23.6	16.8	24.6	3.5
March	501.9	14.60	5.12	3.57	5.17	0.74	73.3	25.7	17.9	25.9	3.7
April	478.8	14.66	5.03	3.42	5.46	0.75	70.2	24.1	16.4	26.1	3.6
May	515.9	14.47	4.81	3.85	5.02	0.79	74.6	24.8	19.9	25.9	4.1
June	476.1	14.54	4.76	3.79	5.32	0.67	69.2	22.7	18.0	25.3	3.2
July	463.7	14.27	4.74	3.80	4.99	0.74	66.2	22.0	17.6	23.1	3.4
August	452.0	14.95	4.98	3.99	5.25	0.73	67.6	22.5	18.0	23.7	3.3
September ..	380.4	14.93	5.71	3.56	4.93	0.73	56.8	21.7	13.5	18.8	2.8
October	386.9	16.40	5.93	4.49	5.14	0.84	63.4	22.9	17.4	19.9	3.2
November ..	347.3	16.34	6.20	4.61	4.78	0.75	56.7	21.5	16.0	16.6	2.6
December...	324.3	16.25	6.16	4.05	5.28	0.76	52.7	20.0	13.1	17.1	2.5

ORIOLE — GUERNSEY.
Calved December 7, 1890.

MONTH.	Milk yield, pounds.	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.
December...	305.4	15.94	6.88	3.56	4.71	0.79	48.7	21.0	10.9	14.4	2.4
January...	440.0	13.83	4.94	2.56	5.53	0.80	60.8	21.7	11.3	24.3	3.5
February...	478.4	13.21	4.21	2.94	5.26	0.80	63.2	20.1	14.1	25.2	3.8
March.....	536.3	13.75	4.45	3.64	4.92	0.74	73.7	23.9	19.5	26.4	4.0
April.....	557.3	14.07	4.90	3.45	4.97	0.75	78.4	27.3	19.2	27.7	4.2
May.....	581.3	14.30	4.84	3.70	5.13	0.63	83.1	28.1	21.5	29.8	3.7
June.....	558.2	14.32	4.85	3.50	5.19	0.78	79.9	27.1	19.5	29.0	4.3
July.....	577.9	14.18	4.95	3.70	4.81	0.72	81.9	28.6	21.4	27.8	4.1
August.....	560.6	14.89	5.22	3.87	4.99	0.81	83.5	29.3	21.7	28.0	4.5
September..	475.3	15.11	5.30	4.48	4.56	0.77	71.8	25.2	21.3	21.7	3.6
October.....	521.8	15.85	5.65	4.58	4.88	0.74	82.7	29.5	23.9	25.5	3.8
November...	495.5	15.95	5.24	3.91	5.98	0.82	79.0	26.0	19.4	29.6	4.0
December...	538.4	16.23	5.21	4.52	5.69	0.81	87.4	28.1	24.3	30.6	4.4

IONE—DEVON.
Calved March 7, 1891.

MONTH.	Milk yield, pounds.	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.
March	253.0	13.73	3.89	4.14	4.90	0.80	34.7	9.8	10.5	12.4	2.0
April	432.9	13.36	4.03	3.21	5.29	0.83	57.8	17.4	13.9	22.9	3.6
May	473.7	13.32	3.93	3.85	4.81	0.73	63.1	18.6	18.2	22.8	3.5
June	471.3	13.43	3.90	3.61	5.18	0.74	63.3	18.4	17.0	24.4	3.5
July	460.4	13.65	3.93	3.85	5.08	0.79	62.8	18.1	17.7	23.4	3.6
August	392.4	14.44	4.54	3.96	5.17	0.77	56.7	17.8	15.6	20.3	3.0
September ..	323.5	14.62	4.67	3.95	5.14	0.86	47.3	15.1	12.8	16.6	2.8
October	346.0	14.84	4.45	4.54	5.05	0.80	51.3	15.4	15.7	17.5	2.7
November...	311.9	15.43	5.31	4.04	5.33	0.75	48.1	16.6	12.6	16.6	2.3
December...	328.8	15.32	4.66	3.73	6.23	0.70	50.4	15.3	12.3	20.5	2.3

GENEVIE'S GIFT — DEVON.

Calved May 15, 1891.

MONTH.	Milk yield, pounds.	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.
May	158.8	12.41	3.25	3.86	4.72	0.58	19.7	5.2	6.1	7.5	0.9
June	403.7	12.66	3.38	3.33	5.21	0.74	51.1	13.7	13.4	21.0	3.0
July	383.1	13.27	4.00	3.45	5.11	0.71	50.8	15.3	13.2	19.6	2.7
August	326.3	14.03	4.69	3.65	4.96	0.73	45.8	15.3	11.9	16.2	2.4
September ..	265.2	14.44	4.95	3.56	5.06	0.87	38.3	13.1	9.5	13.4	2.3
October	277.9	15.69	5.09	4.63	5.22	0.75	43.6	14.1	12.9	14.5	2.1
November ..	243.2	16.70	6.31	3.88	5.73	0.78	40.6	15.4	9.4	13.9	1.9
December....	291.7	15.70	5.51	3.26	6.19	0.74	45.8	16.1	9.5	18.0	2.2

The following tables present the pounds of each constituent of the food consumed by each animal for each month of lactation, as also the average of each:

CRUDE FATS IN FOOD CONSUMED EACH MONTH OF LACTATION — POUNDS.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d	8.4	29.0	28.5	30.3	27.8	29.9	27.3	29.1	33.1	35.3	35.2	42.9	35.8	32.2	29.1	28.2	27.1	29.8	.....
Ayrshire.....	Miss Flow 5th....	9.3	22.9	21.8	31.1	31.6	28.0	28.5	23.5	25.0	23.8	26.9	18.8	....	....	....	....	....	....	....
Ayrshire.....	Queen Duchess..	3.3	22.5	20.5	25.1	23.8	27.3	26.5	27.9	31.7	33.7	35.1	41.2	34.1	29.8	25.1	15.7	....	....	....
Ayrshire.....	Manton Belle	12.8	21.0	25.6	30.3	32.3	31.1	38.2	32.0	28.2	25.3	23.7	20.9	12.4	....	....	....	....	....	....
Ayrshire.....	Junieta Peerless	7.2	19.0	23.7	26.9	33.1	27.8	25.0	21.0	19.9	19.3	20.6	....	....	....	....	....	....	....	....
Jersey	Gilderbloom	10.8	23.1	21.3	23.5	22.9	24.0	26.4	24.0	25.4	30.8	27.4	25.5	20.3	18.5	17.1	19.0	....	....	....
Jersey	Countess Flavia.	4.7	25.6	28.5	26.0	27.4	24.6	25.3	24.0	25.9	25.6	25.3	29.7	29.4	28.5	33.0	27.8	25.4	18.6	18.5
Jersey	Barbara Allen ...	0.9	17.5	22.9	22.6	25.1	23.9	25.0	28.5	28.1	28.2	34.9	29.7	27.2	23.1	21.9	21.2	23.1	....	....
Am. Holderness	Maggie 6th.....	2.2	19.5	20.7	25.7	19.5	20.5	23.2	23.3	25.2	29.6	25.5	23.4	19.7	18.8	17.8	19.3	....	....	....
Am. Holderness	Nellie 6th.....	6.4	18.8	20.2	20.3	19.1	19.8	19.6	20.9	21.3	16.1	18.8	17.1	13.8	11.2	....	....	....	....	....
Guernsey	Rosette Ford....	6.9	21.1	20.2	24.0	27.2	32.4	30.1	34.8	29.8	27.1	23.2	22.2	21.1	18.5	....	....	....	....	....
Guernsey	Ortola.....	11.6	16.3	21.0	26.6	28.1	29.7	34.7	29.7	27.2	23.2	22.9	22.1	24.1	....	....	....	....	....	....
Devon	Ione	9.7	20.5	26.2	32.3	27.9	25.4	21.7	20.9	20.1	21.1	....	....	....	....	....	....	....	....	....
Devon	Genevie's Gift ...	6.6	24.2	22.1	20.2	16.6	16.0	15.1	16.1	....	....	....	....	....	....	....	....	....	....	....
	Average.....	7.2	21.5	23.1	26.1	25.9	25.7	26.2	25.4	26.2	26.1	26.5	26.7	23.8	22.6	24.0	21.9	25.2	24.2	18.5

ALBUMINOIDS NOT AMIDES IN FOOD CONSUMED EACH MONTH OF LACTATION—POUNDS.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d	26.94	75.63	76.85	64.50	64.62	67.94	60.00	66.25	77.87	84.44	77.69	87.62	79.75	77.69	102.0	89.81	85.25	92.94	.....
Ayrshire.....	Miss Flow 5th. ..	24.37	53.19	55.00	72.63	69.00	80.00	75.63	55.00	53.06	55.12	58.62	29.43	.....	.....	.....	.....	.....	.....	.....
Ayrshire.....	Queen Duchess.	8.62	57.50	46.25	53.31	55.06	59.43	56.19	62.19	73.25	79.69	74.31	82.62	75.25	71.37	88.81	56.50	.....	.....	.....
Ayrshire.....	Manton Belle ...	21.25	35.12	54.44	68.50	75.31	64.81	75.06	69.75	66.31	89.50	75.56	65.56	39.12	.....	.....	.....	.....	.....	.....
Ayrshire.....	Junietta P'floss.	13.20	37.60	54.20	56.25	66.25	60.75	57.62	74.06	63.06	62.62	64.44	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom ...	22.62	49.56	44.24	52.81	48.19	53.00	66.25	55.81	52.94	62.25	59.94	59.37	71.44	58.25	52.87	58.62	.....	.....	.....
Jersey	Countess Flavia.	12.10	50.63	68.13	75.00	73.13	60.00	54.37	56.25	59.06	54.56	57.69	69.00	69.37	57.94	65.69	60.81	59.19	66.12	46.69
Jersey	Barbara Allen ..	1.62	37.50	49.06	52.94	55.75	50.12	55.06	65.02	66.19	58.37	70.44	65.69	64.37	81.25	69.00	66.25	71.94	.....	.....
Am. Holderness	Maggie 6th	4.31	41.93	49.37	55.31	41.06	45.19	52.75	55.19	52.75	59.94	56.37	55.44	69.25	59.44	55.81	67.81	.....	.....	.....
Am. Holderness	Nellie 6th.....	12.94	40.75	47.87	44.44	40.44	43.87	45.87	57.25	47.31	28.31	40.69	39.69	49.37	34.81	.....	.....	.....	.....	.....
Guernsey.....	Rosette Ford...	15.56	46.19	45.00	55.00	61.94	75.81	62.81	70.25	65.69	64.37	81.81	70.12	66.06	56.81	.....	.....	.....	.....	.....
Guernsey.....	Oriole.....	20.12	27.25	44.41	60.62	66.37	61.94	70.00	65.69	64.44	81.50	72.50	69.06	75.06	.....	.....	.....	.....	.....	.....
Devon	Ione	13.94	48.44	55.06	64.81	63.00	59.12	77.31	65.31	62.31	65.25	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevieve's Gift ..	10.69	45.62	45.37	45.50	59.87	49.81	46.56	49.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average	15.27	46.21	52.52	58.63	60.00	59.41	61.11	61.93	61.86	65.07	65.84	63.06	65.90	62.19	72.53	66.63	72.12	79.53	46.69

CARBOHYDRATES IN FOOD CONSUMED EACH MONTH OF LACTATION — POUNDS.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d.	102.2	324.6	339.0	348.6	339.5	373.9	416.5	339.7	374.6	344.1	315.7	346.4	358.1	369.7	377.3	477.4	464.6	476.1	.....
Ayrshire.....	Miss Flow 5th....	152.4	263.3	282.0	362.1	342.3	312.3	317.3	270.2	287.1	289.8	322.0	247.1	.....	.....	.....	.....	.....	.....	.....
Ayrshire.....	Queen Duchess....	40.4	253.0	238.3	287.9	289.6	327.9	395.9	326.9	359.5	328.0	309.6	328.1	339.3	342.2	382.2	315.8	.....	.....	.....
Ayrshire.....	Manton Belle	122.0	284.3	301.7	344.4	312.7	272.9	295.4	315.8	324.8	334.5	415.3	377.9	264.5	.....	.....	.....	.....	.....	.....
Ayrshire.....	Junietta P'riess..	69.4	219.6	229.7	236.4	259.6	272.1	286.2	274.3	340.2	335.3	333.1	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom.....	124.7	267.8	266.5	287.4	343.5	282.8	302.5	235.3	224.8	244.6	273.9	294.6	260.3	313.2	297.0	308.6	.....	.....	.....
Jersey	Countess Flavia..	61.5	299.3	206.6	288.3	304.3	282.0	294.2	295.4	323.4	384.9	285.8	386.7	288.2	249.0	259.6	277.7	293.6	247.8	259.3
Jersey	Barbara Allen ..	11.8	204.9	264.9	278.4	306.4	356.4	283.5	323.1	277.3	248.4	279.1	298.0	312.2	297.4	373.5	364.3	368.5	.....	.....
Am. Holderness	Maggie 6th.....	25.6	226.3	259.7	291.8	292.9	240.8	265.6	231.9	223.9	237.6	255.7	269.0	253.2	319.9	305.5	306.1	.....	.....	.....
Am. Holderness	Nellie 6th.....	75.9	220.0	252.1	238.4	288.5	233.6	225.3	206.6	192.7	104.3	183.2	193.7	177.7	202.5	.....	.....	.....	.....	.....
Guernsey.....	Rosette Ford....	82.9	248.8	309.2	282.9	311.5	311.4	266.0	278.6	298.2	312.0	299.4	378.0	262.7	307.7	.....	.....	.....	.....	.....
Guernsey.....	Oriole.....	112.6	220.9	246.7	304.1	277.7	262.9	277.9	298.1	312.3	298.6	387.1	378.7	381.4	.....	.....	.....	.....	.....	.....
Devon	Ione	99.1	189.9	231.0	254.5	278.5	292.3	281.2	360.5	354.4	344.0	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevieve's Gift ..	52.6	175.5	217.6	234.5	218.9	283.1	271.4	271.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average	80.9	242.8	260.2	288.5	297.6	233.2	298.5	287.7	299.5	292.8	305.0	313.5	288.8	300.2	324.2	341.6	375.8	361.9	259.3

STARCH AND SUGARS IN FOOD CONSUMED EACH MONTH OF LACTATION — POUNDS.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d.....	64.1	206.6	225.1	248.5	227.8	251.4	299.1	249.2	264.6	245.8	237.8	237.3	257.8	273.6	213.6	287.4	273.5	277.3	.....
Ayrshire.....	Miss Flew 5th...	70.7	167.7	163.9	224.5	214.6	192.5	203.8	175.4	200.9	166.4	214.6	166.4	.....	.....	.....	.....	.....	.....	.....
Ayrshire.....	Queen Duchess.	26.1	161.1	163.1	200.7	188.5	211.0	282.8	237.5	182.1	229.5	227.4	222.7	249.9	252.5	180.9	150.1	.....	.....	.....
Ayrshire.....	Manton Belle...	73.4	193.6	214.0	167.9	213.6	197.2	197.1	224.2	238.7	182.6	235.9	203.5	128.2	.....	.....	.....	.....	.....	.....
Ayrshire.....	Junietta P'fress.	50.9	82.1	152.5	173.0	174.8	193.3	209.4	152.0	201.6	193.3	191.5	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom ...	87.9	190.6	173.7	196.4	244.9	206.0	212.5	162.9	164.4	166.0	199.9	215.9	145.9	192.0	170.1	178.0	.....	.....	.....
Jersey	Countess Flavia.	39.3	185.9	191.8	181.1	197.0	193.8	212.6	200.3	223.1	275.2	217.4	238.8	203.8	180.7	174.9	198.3	215.3	132.4	80.2
Jersey	Barbara Allen ..	7.9	140.8	185.6	184.4	209.3	243.9	212.5	224.7	187.1	182.4	190.2	217.9	229.9	167.7	224.3	214.5	215.0	.....	.....
Am. Holderness	Maggie 6th.....	22.6	157.3	176.6	192.6	208.9	175.7	187.0	167.0	168.0	162.0	183.9	198.0	142.6	193.8	180.8	185.9	.....	.....	.....
Am. Holderness	Nellie 6th.....	54.8	156.9	168.1	159.8	205.9	171.4	164.6	153.0	150.5	59.9	129.4	141.2	98.7	111.6	.....	.....	.....	.....	.....
Guernsey	Rosette Ford....	42.4	157.7	222.6	188.7	150.6	212.0	198.0	189.9	214.2	229.8	168.7	228.0	213.8	173.6	.....	.....	.....	.....	.....
Guernsey	Oriole.....	68.7	149.5	158.2	147.7	197.8	195.6	193.5	214.2	229.9	169.1	236.0	235.0	224.4	.....	.....	.....	.....	.....	.....
Devon	Ione	58.9	124.2	168.9	171.9	198.7	214.2	154.5	212.7	202.9	197.2	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevie's Gift...	30.2	111.9	153.1	170.6	116.2	161.7	150.7	150.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average	49.9	156.2	180.1	186.4	196.3	201.4	205.3	193.9	202.2	189.2	202.7	209.5	189.5	193.2	190.8	202.3	234.6	204.8	80.2

CRUDE FIBER IN FOOD CONSUMED EACH MONTH OF LACTATION — POUNDS.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d.....	54.9	130.9	127.6	137.7	132.4	166.8	143.9	130.2	138.4	162.0	134.8	152.5	130.1	117.3	145.9	163.5	151.6	142.4	.....
Ayrshire.....	Miss Flow 5th ..	62.6	133.9	138.3	167.9	138.3	142.9	125.5	107.5	117.5	118.9	152.7	119.5	.....	.....	.....	.....	.....	.....	.....
Ayrshire.....	Queen Duchess.	21.9	104.1	96.3	118.2	118.7	157.1	141.0	127.9	135.8	159.3	137.1	151.0	128.6	110.8	136.0	137.2	.....	.....	.....
Ayrshire.....	Manton Belle ..	90.6	130.2	123.7	133.2	157.4	124.0	147.6	126.8	108.7	136.5	152.7	136.4	93.3	.....	.....	.....	.....	.....	.....
Ayrshire.....	Junietta P'riess.	37.3	94.7	119.4	104.9	122.7	108.0	97.5	110.2	118.3	111.8	101.9	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom	54.2	104.3	100.4	126.9	117.8	106.8	111.1	114.7	95.5	110.0	105.1	100.6	102.6	104.1	94.6	92.0	.....	.....	.....
Jersey	Countess Flavia.	32.4	141.2	76.3	126.5	118.9	109.4	111.2	112.5	141.4	132.7	108.8	123.9	146.5	110.7	122.0	108.6	99.9	105.7	117.0
Jersey	Barbara Allen ..	5.2	87.5	106.1	110.2	141.2	127.5	114.6	121.9	138.8	108.5	124.2	111.1	102.8	116.1	127.0	117.6	103.7	.....	.....
Am. Holderness	Maggie 6th	14.2	91.7	97.1	123.4	99.9	90.5	96.7	105.3	93.5	105.0	95.1	88.8	99.4	107.5	98.0	90.8	.....	.....	.....
Am. Holderness	Nellie 6th.....	30.5	85.0	97.5	107.2	96.5	80.7	75.7	90.9	75.4	78.9	76.1	66.9	71.1	75.5	.....	.....	.....	.....	.....
Guernsey.....	Rosette Ford....	45.1	118.3	104.3	107.1	114.1	158.6	113.3	123.9	111.1	102.7	117.2	127.9	117.2	94.3	.....	.....	.....	.....	.....
Guernsey.....	Orlone.....	77.7	90.0	98.7	112.1	129.1	111.9	123.2	111.1	102.9	115.6	128.4	120.5	112.0	.....	.....	.....	.....	.....	.....
Devon	Ione	52.9	105.9	102.9	119.3	103.2	99.7	114.7	124.7	116.5	104.0	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevieve's Gift..	31.4	102.4	93.8	84.6	94.3	101.4	92.1	84.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average	43.7	108.6	105.9	120.3	120.1	120.4	114.3	113.8	114.1	118.9	119.6	119.8	110.4	104.5	120.6	118.3	120.4	124.0	117.0

ASH IN FOOD CONSUMED EACH MONTH OF LACTATION — POUNDS.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d	11.0	35.6	34.1	32.9	33.9	40.4	33.9	33.7	36.5	38.8	33.6	41.6	35.8	38.5	47.6	36.4	35.4	36.6	.....
Ayrshire	Miss Flow 5th...	13.5	26.0	29.1	35.1	36.6	35.1	34.9	28.5	27.8	30.0	36.5	24.7	.....	.....	.....	.....	.....	.....	.....
Ayrshire	Queen Duchess.	4.6	28.0	24.9	27.9	29.9	37.3	32.8	32.5	35.2	37.4	33.1	40.7	34.9	36.0	42.8	25.7	.....	.....	.....
Ayrshire	Manton Belle....	16.8	27.4	30.2	33.7	36.2	29.4	38.8	33.7	35.5	43.0	32.3	29.6	23.2	.....	.....	.....	.....	.....	.....
Ayrshire	Junietta P'less.	12.6	21.5	26.9	25.2	33.6	29.3	31.0	35.3	25.9	25.7	25.7	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom	13.9	25.3	26.5	31.1	27.6	27.3	28.9	26.7	23.4	30.8	28.7	31.5	33.8	23.3	23.1	23.4	.....	.....	.....
Jersey	Countess Flavia.	8.0	28.9	23.1	32.3	33.5	29.8	27.1	29.3	34.5	31.2	28.5	32.7	32.4	26.3	33.1	29.2	31.3	32.6	21.6
Jersey	Barbara Allen ..	0.6	21.8	25.4	28.3	34.0	29.5	29.0	31.4	30.8	26.2	34.3	30.5	33.0	38.3	28.0	27.5	28.3	.....	.....
Am. Holderness	Maggie 6th.....	2.7	22.0	25.9	32.4	23.4	23.3	25.3	25.4	23.1	29.2	26.2	28.5	32.8	23.9	23.0	23.6	.....	.....	.....
Am. Holderness	Nellie 6th.....	6.9	21.0	25.6	26.4	21.8	22.3	20.9	22.6	19.6	19.7	20.5	21.3	23.8	15.4	.....	.....	.....	.....	.....
Guernsey	Rosette Ford....	10.4	28.4	27.2	27.5	29.8	36.4	27.7	34.2	30.5	33.0	38.6	28.4	27.4	23.2	.....	.....	.....	.....	.....
Guernsey	Oriole	15.0	21.1	24.4	29.2	30.8	27.4	34.1	30.5	33.1	38.2	29.0	28.4	29.3	.....	.....	.....	.....	.....	.....
Devon	Ione	11.6	23.6	24.7	32.6	29.4	31.4	37.5	27.0	26.6	26.2	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevie's Gift ..	6.0	26.6	24.6	25.6	29.9	21.2	20.5	20.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average	9.5	25.5	26.6	30.0	30.7	30.0	30.2	29.4	29.4	31.5	30.6	30.6	30.6	28.1	32.9	27.6	31.7	34.6	21.6

The following tables present the milk yield of each animal, the percentage of each constituent, and the pounds of each constituent of the milk yielded during each month of lactation, as also the general averages of each of the above:

MILK YIELD EACH MONTH OF LACTATION — POUNDS.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d.....	273.0	884.0	895.0	780.6	750.5	725.1	790.1	655.8	638.1	544.7	560.6	683.0	741.6	662.0	612.9	617.2	563.8	540.3	.....
Ayrshire.....	Miss Flow 5th...	363.5	626.1	573.6	588.0	591.6	594.4	551.7	449.5	431.5	333.9	173.9	33.5	.....	.....	.....	.....	.....	.....	.....
Ayrshire.....	Queen Duchess.	99.7	805.7	671.1	701.6	657.8	703.9	747.1	619.0	702.2	662.4	680.6	680.9	673.5	558.0	363.3	122.4	.....	.....	.....
Ayrshire.....	Manton Belle....	327.8	649.6	655.4	714.2	688.8	664.5	652.1	657.3	588.7	464.7	385.0	271.1	76.6	.....	.....	.....	.....	.....	.....
Ayrshire.....	Junietta Prless.	193.5	453.5	462.6	512.4	487.0	488.9	486.1	427.1	435.8	410.1	434.9	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom	341.1	535.6	473.8	410.7	428.4	343.3	342.0	307.1	356.8	315.5	301.0	255.5	204.5	182.2	155.9	164.3	.....	.....	.....
Jersey	Countess Flavia.	171.8	627.7	614.5	580.5	574.0	492.4	474.1	442.7	448.9	449.8	365.8	409.8	409.6	421.7	406.2	408.1	377.9	261.9	87.0
Jersey	Barbara Allen ..	519.0	501.7	494.2	450.6	495.2	409.9	437.4	418.1	432.8	468.3	471.7	444.0	337.1	367.4	340.7	361.9	.....	.....	.....
Am. Holderness	Maggie 6th.....	61.2	568.5	585.3	522.9	493.2	413.0	449.4	417.1	428.1	407.6	416.9	391.8	318.2	320.1	267.7	121.3	.....	.....	.....
Am. Holderness	Nellie 6th.....	240.3	513.9	531.9	455.4	474.6	420.1	400.6	364.2	387.4	183.1	123.9	.....	.....	.....	.....	.....	.....	.....	.....
Guernsey	Rosette Ford....	195.4	543.4	561.5	482.3	501.9	478.8	515.9	476.1	463.7	452.0	380.4	386.9	347.3	324.3	.....	.....	.....	.....	.....
Guernsey	Oriole.....	305.4	440.0	478.4	536.3	557.3	581.3	558.2	577.9	560.6	475.3	521.8	495.5	538.4	.....	.....	.....	.....	.....	.....
Devon	Ione	253.0	432.9	473.7	471.3	460.4	392.4	323.5	346.0	311.9	328.8	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevieve's Gift..	158.8	403.7	383.1	326.3	265.2	277.9	243.2	291.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average	250.2	570.6	561.0	538.1	530.4	494.7	498.0	462.8	475.9	422.8	402.2	405.2	405.1	405.2	357.8	299.2	470.9	401.1	87.0

TOTAL SOLIDS IN MILK EACH MONTH OF LACTATION — PER CENT.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d.....	13.47	12.32	12.26	12.36	12.62	12.92	13.12	13.32	13.81	14.33	13.60	13.26	12.40	12.35	12.64	12.89	12.96	12.67	.....
Ayrshire.....	Miss Flow 5th...	14.85	13.06	13.13	13.18	13.23	13.12	13.31	14.33	13.96	14.98	15.81	17.56	.....	.....	.....	.....	.....	.....	.....
Ayrshire.....	Queen Duchess	13.51	13.55	13.31	12.77	12.97	13.47	13.45	13.29	13.42	13.13	13.19	13.40	13.30	14.28	14.46	16.34	.....	.....	.....
Ayrshire.....	Manton Belle ...	13.32	11.58	11.80	12.60	12.59	12.39	11.82	12.12	12.49	13.07	13.53	14.21	14.44	.....	.....	.....	.....	.....	.....
Ayrshire.....	Junietta P'riess.	12.82	12.14	12.09	12.16	11.99	12.14	12.34	12.49	12.72	12.86	13.16	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom	15.70	14.90	14.50	15.56	15.51	15.19	15.63	15.46	14.83	15.03	14.41	14.56	15.26	16.26	16.31	15.96	.....	.....	.....
Jersey	Countess Flavia.	14.99	14.33	14.91	14.90	14.81	16.15	15.89	16.41	16.48	17.03	16.89	16.99	16.99	16.74	16.95	16.42	16.84	18.95	17.94
Jersey	Barbara Allen ..	14.03	14.23	14.26	15.23	15.33	15.37	15.29	14.91	15.14	14.84	14.63	14.80	15.47	15.92	16.21	16.59	.....	.....	.....
Am. Holderness	Maggie 6th	14.44	12.22	11.82	12.11	12.48	12.38	12.86	12.40	12.20	12.50	12.57	12.81	13.15	13.34	14.03	15.26	.....	.....	.....
Am. Holderness	Nellie 6th.....	13.78	12.10	12.06	12.80	12.40	12.83	13.05	12.41	12.96	12.78	12.94	.....	.....	.....	.....	.....	.....	.....	.....
Guernsey.....	Rosette Ford...	14.79	14.63	14.04	14.20	14.60	14.66	14.47	14.54	14.27	14.95	14.93	16.40	16.34	16.25	.....	.....	.....	.....	.....
Guernsey.....	Oriole.....	15.94	13.83	13.21	13.75	14.07	14.30	14.32	14.18	14.89	15.11	15.85	15.95	16.23	.....	.....	.....	.....	.....	.....
Devon	Ione	13.73	13.36	13.32	13.43	13.65	14.44	14.62	14.84	15.43	15.32	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevie's Gift ..	12.41	12.66	13.27	14.03	14.44	15.69	16.70	15.70	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average	14.13	13.21	13.14	13.45	13.63	13.94	14.07	14.03	14.05	14.30	14.30	14.99	14.84	15.03	15.10	15.58	14.90	15.81	17.94

FAT IN MILK EACH MONTH OF LACTATION — PER CENT.

Breed.	NAME OF ANIMALS.	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth	Eleventh	Twelfth	Thirteenth	Fourteenth	Fifteenth	Sixteenth	Seventeenth	Eighteenth	Nineteenth
Hol.-Friesian...	Esel 2d.....	4.86	3.64	3.86	3.64	3.66	3.92	3.55	3.73	3.91	3.95	3.72	3.20	2.99	2.92	3.87	3.30	3.11	2.80	.....
Ayrshire.....	Miss Flow 5th....	5.60	3.96	3.91	4.00	3.80	4.11	4.05	4.37	4.34	4.95	4.80	5.67	.....	.....	.....	.....	.....	.....	.....
Ayrshire.....	Queen Duchess..	3.96	4.35	4.48	3.91	3.95	3.78	3.60	3.31	3.86	3.72	3.67	3.60	3.72	4.13	3.95	5.30	.....	.....	.....
Ayrshire.....	Manton Belle....	4.00	3.10	2.82	3.63	3.40	3.28	3.36	3.32	3.42	3.75	3.83	3.52	3.67	.....	.....	.....	.....	.....	.....
Ayrshire.....	Junietta P'less.	3.05	2.97	2.94	2.86	2.78	2.72	2.91	3.12	3.09	2.91	2.93	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom....	6.08	5.62	5.20	6.16	5.47	5.37	5.68	5.62	5.38	5.60	4.91	4.97	5.41	6.22	5.87	6.45	.....	.....	.....
Jersey	Countess Flavia.	5.26	4.84	5.32	5.36	5.37	6.12	6.00	6.41	6.19	6.45	6.35	6.66	6.30	5.87	5.87	5.89	6.32	8.07	6.30
Jersey	Barbara Allen...	4.92	5.05	5.33	5.55	5.70	5.48	5.39	5.46	5.34	4.89	5.15	5.52	5.58	5.41	6.16	6.27	.....	.....	.....
Am. Holderness	Maggie 6th.....	5.30	3.68	3.36	3.63	3.36	3.18	3.41	3.46	3.63	3.87	3.31	3.45	3.78	3.71	3.60	4.75	.....	.....	.....
Am. Holderness	Nellie 6th.....	4.78	3.54	3.35	3.25	3.30	3.47	3.29	3.52	3.56	3.26	3.55	.....	.....	.....	.....	.....	.....	.....	.....
Guernsey.....	Rosette Ford....	5.41	5.30	4.74	4.90	5.12	5.03	4.81	4.76	4.74	4.98	5.71	5.93	6.20	6.16	.....	.....	.....	.....	.....
Guernsey.....	Oriole	6.88	4.94	4.21	4.45	4.90	4.84	4.85	4.95	5.22	5.30	5.65	5.24	5.21	.....	.....	.....	.....	.....	.....
Devon	Ione	3.89	4.03	3.93	3.90	3.93	4.54	4.67	4.45	5.31	4.66	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevie's Gift...	3.25	3.38	4.00	4.69	4.95	5.09	6.31	5.51	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average.....	4.92	4.17	4.11	4.28	4.27	4.36	4.42	4.43	4.46	4.48	4.38	4.78	4.76	4.92	4.89	5.33	4.72	5.44	6.30

CASEINE IN MILK EACH MONTH OF LACTATION — PER CENT.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d.....	2.91	2.88	2.83	3.05	3.17	3.58	2.94	2.93	3.67	4.01	3.98	3.74	3.86	3.68	4.29	4.22	3.92	3.39	.....
Ayrshire.....	Miss Flow 5th ..	3.15	3.23	3.15	3.66	4.08	3.71	3.42	3.55	3.59	4.00	4.48	5.62	.....	.....	.....	.....	.....	.....	.....
Ayrshire.....	Queen Duchess..	3.60	3.13	2.91	3.06	3.54	3.38	2.95	3.08	3.55	3.43	3.56	3.50	3.76	3.79	4.47	5.63	.....	.....	.....
Ayrshire.....	Manton Belle ..	3.42	2.41	3.01	3.13	3.03	3.10	3.07	3.27	3.29	3.68	4.29	3.62	4.21	.....	.....	.....	.....	.....	.....
Ayrshire.....	Junietta P'less.	3.32	3.13	2.87	3.55	3.12	3.51	3.32	3.29	4.04	3.44	2.99	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom	3.57	3.21	3.47	3.47	3.43	3.41	4.06	3.88	4.01	3.97	4.00	4.21	4.14	4.95	4.26	4.24	.....	.....	.....
Jersey	Countess Flavia.	3.81	3.89	4.13	3.78	3.70	4.04	3.84	3.99	4.16	4.00	4.22	4.79	4.39	4.48	4.43	4.08	4.37	4.44	5.66
Jersey	Barbara Allen ..	3.14	3.28	3.55	3.71	3.16	3.72	4.18	4.00	4.01	3.80	3.94	3.94	3.90	4.81	4.10	4.24	.....	.....	.....
Am. Holderness	Maggie 6th	3.30	2.93	3.17	2.88	2.55	3.00	3.27	3.15	3.45	3.36	3.54	3.75	3.89	4.63	3.60	3.80	.....	.....	.....
Am. Holderness	Nellie 6th.....	3.51	2.82	3.23	3.06	2.85	3.26	3.48	3.39	3.76	3.39	4.08	.....	.....	.....	.....	.....	.....	.....	.....
Guernsey.....	Rosette Ford....	4.45	3.20	3.09	3.48	3.57	3.42	3.85	3.79	3.80	3.99	3.56	4.49	4.61	4.05	.....	.....	.....	.....	.....
Guernsey.....	Orlolo.....	3.56	2.56	2.94	3.64	3.45	3.70	3.50	3.70	3.87	4.48	4.58	3.91	4.52	.....	.....	.....	.....	.....	.....
Devon	Ione	4.14	3.21	3.85	3.61	3.85	3.36	3.95	4.54	4.04	3.73	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevie's Gift ..	3.86	3.33	3.45	3.65	3.56	4.63	3.88	3.26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average.....	3.55	3.09	3.26	3.41	3.36	3.60	3.56	3.56	3.79	3.79	4.09	4.15	4.14	4.34	4.19	4.37	4.15	3.92	5.66

SUGAR IN MILK EACH MONTH OF LACTATION—PER CENT.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian.	Esel 2d	5.06	5.12	4.89	4.96	5.31	4.66	5.85	5.93	5.49	5.52	5.22	5.55	4.86	5.00	3.75	4.59	5.11	5.72	.....
Ayrshire.	Miss Flow 5th ...	5.45	5.19	5.36	4.92	4.64	4.64	5.19	5.62	5.33	5.45	5.69	5.34	.....	.....	.....	.....	.....	.....	.....
Ayrshire.	Queen Duchess.	5.19	5.35	5.25	5.07	4.92	5.59	6.10	6.16	5.36	5.26	5.31	5.53	5.09	5.57	5.26	4.79	.....	.....	.....
Ayrshire.	Manton Belle ...	5.17	5.38	5.28	5.33	5.51	5.41	4.77	5.00	5.16	4.96	4.80	6.34	5.74	.....	.....	.....	.....	.....	.....
Ayrshire.	Junietta P'rless.	5.81	5.36	5.56	5.07	5.42	5.21	5.46	5.26	4.88	5.78	6.59	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom	5.31	5.33	5.11	5.15	5.80	5.60	5.26	5.14	4.88	4.75	4.75	4.72	4.93	4.33	5.41	4.45	.....	.....	.....
Jersey	Countess Flavia.	5.16	4.84	4.68	5.02	5.00	5.26	5.26	5.09	5.40	5.76	5.52	4.79	5.58	5.64	5.90	5.68	5.46	5.55	5.11
Jersey	Barbara Allen ..	5.27	5.21	4.66	5.25	5.75	5.38	4.99	4.75	5.01	5.46	4.82	4.66	5.24	4.92	5.23	5.37	.....	.....	.....
Am. Holderness	Maggie 6th	5.07	4.85	4.56	4.89	5.85	5.47	5.55	5.06	4.51	4.64	5.00	4.90	4.77	4.29	6.15	5.86	.....	.....	.....
Am. Holderness	Nellie 6th	5.06	5.08	4.85	5.32	5.52	5.38	5.61	4.81	4.93	5.44	4.51	.....	.....	.....	.....	.....	.....	.....	.....
Guernsey	Rosette Ford ...	4.15	5.41	5.49	5.10	5.17	5.46	5.02	5.32	4.99	5.25	4.93	5.14	4.78	5.28	.....	.....	.....	.....	.....
Guernsey	Ortolo	4.71	5.53	5.26	4.92	4.97	5.13	5.19	4.81	4.99	4.56	4.88	5.98	5.69	.....	.....	.....	.....	.....	.....
Devon	Ione	4.90	5.29	4.81	5.18	5.08	5.17	5.14	5.05	5.33	6.23	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevieve's Gift ..	4.72	5.21	5.11	4.96	5.06	5.22	5.73	6.19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average	5.07	5.23	5.06	5.31	5.31	5.25	5.31	5.36	5.15	5.41	5.37	5.30	5.19	5.01	5.28	5.12	5.29	5.64	5.11

ASH IN MILK EACH MONTH OF LACTATION — PER CENT.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d	0.64	0.68	0.68	0.71	0.48	0.76	0.78	0.73	0.74	0.85	0.68	0.77	0.69	0.75	0.73	0.78	0.82	0.76	.....
Ayrshire	Miss Flow 5th...	0.65	0.68	0.71	0.60	0.71	0.66	0.65	0.79	0.70	0.58	0.84	0.93	.....	.....	.....	.....	.....	.....	.....
Ayrshire	Queen Duchess.	0.76	0.72	0.67	0.73	0.56	0.72	0.80	0.74	0.65	0.72	0.65	0.77	0.73	0.79	0.78	0.62	.....	.....	.....
Ayrshire	Manton Belle...	0.73	0.69	0.69	0.51	0.65	0.60	0.62	0.63	0.62	0.68	0.66	0.73	0.82	.....	.....	.....	.....	.....	.....
Ayrshire	Junietta P'ress.	0.64	0.68	0.72	0.68	0.67	0.70	0.65	0.82	0.71	0.73	0.65	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom	0.74	0.74	0.72	0.78	0.81	0.81	0.68	0.82	0.56	0.71	0.75	0.76	0.78	0.76	0.77	0.82	.....	.....	.....
Jersey	Countess Flavia.	0.76	0.76	0.78	0.74	0.74	0.73	0.79	0.82	0.73	0.82	0.80	0.75	0.72	0.75	0.75	0.77	0.69	0.89	0.87
Jersey	Barbara Allen...	0.70	0.69	0.72	0.72	0.72	0.79	0.73	0.70	0.78	0.69	0.72	0.63	0.75	0.78	0.72	0.71	.....	.....	.....
Am. Holderness	Maggie 6th	0.77	0.76	0.73	0.71	0.72	0.73	0.63	0.73	0.61	0.63	0.72	0.71	0.71	0.71	0.68	0.85	.....	.....	.....
Am. Holderness	Nellie 6th	0.43	0.66	0.63	0.67	0.73	0.72	0.67	0.69	0.71	0.69	0.80	.....	.....	.....	.....	.....	.....	.....	.....
Guernsey	Rosette Ford...	0.78	0.72	0.72	0.72	0.74	0.75	0.79	0.67	0.74	0.73	0.73	0.84	0.75	0.76	.....	.....	.....	.....	.....
Guernsey	Ortola	0.79	0.80	0.80	0.74	0.75	0.63	0.78	0.72	0.81	0.77	0.74	0.82	0.81	.....	.....	.....	.....	.....	.....
Devon	Ione	0.80	0.83	0.73	0.74	0.79	0.77	0.86	0.80	0.75	0.70	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevie's Gift ..	0.58	0.74	0.71	0.73	0.87	0.75	0.78	0.74	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average	0.70	0.72	0.72	0.70	0.71	0.72	0.74	0.74	0.66	0.67	0.67	0.78	0.75	0.76	0.74	0.76	0.76	0.83	0.87

TOTAL SOLIDS IN MILK EACH MONTH OF LACTATION — POUNDS.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel ad.....	36.73	108.91	109.73	97.50	94.71	93.68	103.66	87.35	88.12	78.10	76.20	90.60	91.90	81.80	77.50	79.50	73.00	68.40	.....
Ayrshire.....	Miss Flow 5th...	53.98	81.77	75.31	77.50	78.27	70.11	73.42	64.41	60.24	50.02	27.49	5.88	.....	.....	.....	.....	.....	.....	.....
Ayrshire.....	Queen Duchess.	13.47	109.17	89.32	89.59	85.32	94.81	100.49	86.25	94.24	86.97	91.10	91.20	89.60	79.70	52.50	20.00	.....	.....	.....
Ayrshire.....	Manton Belle ...	43.66	75.22	77.34	89.99	86.72	82.30	77.00	79.70	73.50	60.70	52.30	38.50	11.20	.....	.....	.....	.....	.....	.....
Ayrshire.....	Junietta P'rless.	24.81	55.05	55.92	62.30	58.40	59.40	59.90	53.30	55.40	52.70	57.20	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom	53.55	79.80	68.70	63.91	66.45	52.15	53.63	47.48	52.90	47.40	43.40	37.50	31.20	29.60	25.40	26.20	.....	.....	.....
Jersey	Countess Flavia.	25.75	89.95	91.62	86.49	85.01	79.52	75.33	72.65	73.98	76.60	61.78	69.62	69.59	70.60	68.80	67.00	63.60	49.00	15.60
Jersey	Barbara Allen ..	72.82	71.39	70.47	68.63	75.91	63.00	66.88	63.34	65.50	69.50	69.00	65.70	52.10	58.50	55.20	60.00	.....	.....	.....
Am. Holderness	Maggie 6th	8.84	69.47	69.18	63.32	61.55	51.13	57.79	51.72	52.20	50.90	52.40	50.20	41.80	42.70	37.50	18.50	.....	.....	.....
Am. Holderness	Nellie 6th.....	33.11	62.18	64.10	56.01	58.85	53.90	52.28	45.20	50.20	23.40	16.00	.....	.....	.....	.....	.....	.....	.....	.....
Guernsey	Rosette Ford....	23.90	79.50	78.83	68.49	73.28	70.19	74.60	69.20	66.20	67.60	56.80	63.40	56.70	52.70	.....	.....	.....	.....	.....
Guernsey	Orlolo.....	43.68	60.85	63.20	73.74	78.41	83.10	79.90	81.90	83.50	71.80	82.70	79.00	87.40	.....	.....	.....	.....	.....	.....
Devon	Ione	34.70	57.80	63.10	63.30	62.80	56.70	47.30	51.30	48.10	50.40	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevieve's Gift..	19.70	51.10	50.80	45.80	38.30	43.60	40.60	45.80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average	35.62	75.16	74.40	71.90	71.71	68.09	68.77	64.26	66.47	60.47	57.20	59.16	59.06	59.37	52.82	45.20	68.30	59.00	15.60

FAT IN MILK EACH MONTH OF LACTATION -- POUNDS.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d	13.27	32.18	34.55	28.41	27.46	28.42	28.05	24.46	24.95	21.52	20.80	21.90	22.20	19.30	23.70	20.40	17.50	15.10	.....
Ayrshire.....	Miss Flow 5th...	20.35	24.79	22.43	23.52	22.48	21.96	22.34	19.64	18.73	16.53	8.35	1.90	.....	.....	.....	.....	.....	.....	.....
Ayrshire.....	Queen Duchess.	3.95	35.05	30.06	27.43	25.98	26.61	26.90	21.48	27.10	24.64	25.30	24.50	25.10	23.00	14.40	6.50	.....	.....	.....
Ayrshire.....	Manton Belle....	13.11	20.14	18.48	25.93	23.42	21.80	21.90	21.20	20.10	17.40	14.70	9.50	2.80	.....	.....	.....	.....	.....	.....
Ayrshire.....	Junietta P'riess.	5.90	13.47	13.60	14.60	13.50	13.30	14.10	13.30	13.50	11.90	12.70	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom	20.74	30.10	24.64	25.30	23.43	18.44	19.42	17.26	19.20	17.70	14.80	12.70	11.00	11.30	9.20	10.60	.....	.....	.....
Jersey	Countess Flavia.	9.04	30.28	32.69	31.11	30.82	30.13	28.45	28.39	27.79	29.01	23.23	27.29	25.80	24.80	23.80	24.00	23.90	21.10	5.50
Jersey	Barbara Allen ..	25.53	25.33	26.34	25.01	28.23	22.46	23.58	22.83	23.10	22.90	24.30	24.50	18.80	19.90	21.00	22.70	.....	.....	.....
Am. Holderness	Maggie 6th.....	3.24	20.92	19.67	18.98	16.57	13.18	15.32	14.43	15.50	15.80	13.80	13.50	12.00	11.90	9.60	5.80	.....	.....	.....
Am. Holderness	Nellie 6th.....	11.49	18.19	17.82	14.80	15.66	14.58	13.18	12.82	13.80	6.00	4.40	.....	.....	.....	.....	.....	.....	.....	.....
Guernsey.....	Rosette Ford	10.57	28.80	26.61	23.63	25.70	24.08	24.80	22.70	22.00	22.50	21.70	22.90	21.50	20.00	.....	.....	.....	.....	.....
Guernsey.....	Oriole.....	21.01	21.73	20.14	23.87	27.31	28.10	27.10	28.60	29.30	25.20	29.50	26.00	28.10	.....	.....	.....	.....	.....	.....
Devon	Ione	9.80	17.40	18.60	18.40	18.10	17.80	15.10	15.40	16.60	15.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevieve's Gift..	5.20	13.70	15.30	15.30	13.10	14.10	15.40	16.10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average.....	12.38	23.72	22.92	22.59	22.27	21.07	22.12	19.90	20.90	18.94	17.80	18.47	18.59	18.60	17.00	15.00	20.70	18.10	5.50

CASEINE IN MILK EACH MONTH OF LACTATION — POUNDS.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d	7.94	25.46	25.32	23.80	23.79	25.96	23.23	19.22	23.42	21.82	22.30	25.50	28.60	24.40	26.30	26.00	22.10	18.30	.....
Ayrshire.....	Miss Flow 5th ...	11.45	21.22	18.07	21.52	24.13	19.83	18.86	15.95	15.49	13.36	7.79	1.88	.....	.....	.....	.....	.....	.....	.....
Ayrshire.....	Queen Duchess.	3.59	25.22	19.53	21.47	23.29	23.79	22.04	19.99	24.93	22.72	24.60	23.80	25.30	21.20	16.20	6.90	.....	.....	.....
Ayrshire.....	Manton Belle....	11.21	15.65	19.73	22.35	20.87	20.60	20.00	21.50	19.40	17.10	16.50	9.80	3.30	.....	.....	.....	.....	.....	.....
Ayrshire	Junietta P'fless.	6.42	14.19	13.28	18.20	15.20	17.20	16.10	14.00	17.60	14.10	13.80	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom	12.18	17.19	16.44	14.25	14.69	11.71	13.89	11.92	14.30	12.50	12.00	10.80	8.50	9.00	6.60	7.00	.....	.....	.....
Jersey	Countess Flavia.	6.55	24.42	25.38	21.94	21.23	19.89	18.20	17.56	13.67	17.99	15.44	19.63	17.98	18.90	18.00	16.70	16.50	11.60	4.90
Jersey	Barbara Allen ..	16.30	16.46	17.54	16.72	15.64	15.25	18.28	16.72	17.40	17.80	18.60	17.50	13.10	17.70	14.00	15.30	.....	.....	.....
Am. Holderness	Maggie 6th	2.01	16.66	18.55	15.05	12.58	12.39	14.70	13.14	14.80	13.70	14.80	14.70	12.40	14.80	9.60	4.60	.....	.....	.....
Am. Holderness	Nellie 6th.....	8.43	14.49	17.18	13.93	13.52	13.69	13.94	12.35	14.60	6.20	5.00	.....	.....	.....	.....	.....	.....	.....	.....
Guernsey	Rosette Ford	8.70	17.39	17.35	16.78	17.92	16.37	19.90	18.00	17.60	18.00	13.50	17.40	16.00	13.10	.....	.....	.....	.....	.....
Guernsey.....	Orfote.....	10.87	11.26	14.07	19.52	19.23	21.50	19.50	21.40	21.70	21.30	23.90	19.40	24.30	.....	.....	.....	.....	.....	.....
Devon	Ione	10.50	13.90	18.20	17.00	17.70	15.60	12.80	15.70	12.60	12.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevieve's Gift...	6.10	13.40	13.20	11.90	9.50	12.90	9.40	9.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average.....	8.73	17.64	18.13	18.53	17.80	17.62	17.20	16.22	16.63	15.26	15.69	16.04	16.61	17.02	15.12	12.75	19.30	14.90	4.90

SUGAR IN MILK EACH MONTH OF LACTATION—POUNDS.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d	13.81	45.26	43.76	38.72	39.85	33.79	46.22	38.89	35.03	30.07	29.30	37.90	36.00	33.10	23.00	28.30	28.80	30.90	.....
Ayrshire	Miss Flow 5th ...	19.81	32.50	30.74	28.93	27.45	24.80	28.63	25.26	23.00	18.20	9.90	1.80	.....	.....	.....	.....	.....	.....	.....
Ayrshire	Queen Duchess.	5.17	43.10	35.23	35.57	32.36	39.35	45.57	39.98	37.64	34.84	36.70	37.70	34.30	31.10	19.10	5.90	.....	.....	.....
Ayrshire	Manton Belle ...	16.95	34.95	34.61	38.07	37.95	35.90	31.10	32.90	30.40	23.00	18.50	17.20	4.50	.....	.....	.....	.....	.....	.....
Ayrshire	Junieta P'less.	11.24	24.31	25.72	26.00	26.40	25.50	26.50	22.50	21.20	23.70	28.70	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom ...	18.11	28.55	24.21	21.15	25.25	19.22	17.99	15.78	17.40	15.00	14.30	12.10	10.10	7.90	8.40	7.30	.....	.....	.....
Jersey	Countess Flavia.	8.87	30.38	28.76	29.14	28.70	25.90	24.94	22.98	24.24	25.91	20.19	19.63	22.86	23.50	24.00	23.20	20.60	14.60	4.40
Jersey	Barbara Allen...	27.35	26.14	23.03	23.66	28.47	22.05	21.83	19.86	21.70	25.60	22.70	20.70	17.70	18.10	17.80	19.40	.....	.....	.....
Am. Holderness	Maggie 6th	3.13	27.57	26.69	25.57	28.85	22.59	24.94	21.10	19.30	18.90	20.80	19.20	15.20	13.70	16.50	7.10	.....	.....	.....
Am. Holderness	Nellie 6th	12.16	26.11	25.80	24.23	26.20	22.60	22.47	17.52	19.10	10.00	5.60	.....	.....	.....	.....	.....	.....	.....	.....
Guernsey	Rosette Ford....	8.11	29.40	30.83	24.60	25.95	26.14	25.90	25.30	23.10	23.70	18.80	19.90	16.60	17.10	.....	.....	.....	.....	.....
Guernsey	Oriole	14.38	24.33	25.16	26.39	27.70	29.80	29.00	27.80	28.00	21.70	25.50	29.60	30.60	.....	.....	.....	.....	.....	.....
Devon	Ione	12.40	22.90	22.80	24.40	23.40	20.30	16.60	17.50	16.60	20.50	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevie's Gift ..	7.50	21.00	19.60	16.20	13.40	14.50	13.90	18.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average	12.79	29.76	28.35	27.33	28.00	25.89	23.96	22.31	22.91	23.96	20.92	21.53	20.87	20.64	18.13	15.20	24.70	22.70	4.40

ASH IN MILK EACH MONTH OF LACTATION — POUNDS.

Breed.	NAMES OF ANIMALS.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d	1.70	6.00	6.10	5.50	3.60	5.50	6.20	4.80	4.70	4.60	3.80	5.30	5.10	5.00	4.50	4.80	4.60	4.10	.....
Ayrshire.....	Mis Flow 5th.....	2.40	4.30	4.10	3.50	4.20	3.50	3.60	3.60	3.00	1.90	1.50	0.30	.....	.....	.....	.....	.....	.....	.....
Ayrshire.....	Queen Duchess..	0.80	5.80	4.50	5.10	3.70	5.10	6.00	4.80	4.60	4.80	4.40	5.20	4.90	4.40	2.80	0.70	.....	.....	.....
Ayrshire.....	Manton Belle....	2.40	4.50	4.50	3.60	4.50	4.00	4.00	4.10	3.60	3.20	2.50	2.00	0.60	.....	.....	.....	.....	.....	.....
Ayrshire.....	Junietta Peerless	1.20	3.10	3.30	3.50	3.30	3.40	3.20	3.50	3.10	3.00	2.80	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom	2.50	4.00	3.40	3.20	3.50	2.80	2.30	2.50	2.00	2.20	2.30	1.90	1.60	1.40	1.20	1.30	.....	.....	.....
Jersey	Countess Flavia.	1.30	4.80	4.80	4.30	4.20	3.60	3.70	3.60	3.30	3.70	2.90	3.10	2.90	3.20	3.00	3.10	2.60	2.30	0.80
Jersey	Barbara Allen ...	3.60	3.50	3.60	3.20	3.60	3.20	3.20	2.90	3.40	3.20	3.40	3.00	2.50	2.80	2.40	2.60	.....	.....	.....
Am. Holderness	Maggie 6th.....	0.50	4.30	4.30	3.70	3.60	3.00	2.80	3.00	2.60	2.50	3.00	2.80	2.20	2.30	1.80	1.00	.....	.....	.....
Am. Holderness	Nellie 6th.....	1.00	3.40	3.40	3.10	3.50	3.00	2.70	2.50	2.70	1.20	1.00	.....	.....	.....	.....	.....	.....	.....	.....
Guernsey.....	Rosette Ford.....	1.50	3.90	4.00	3.50	3.70	3.60	4.10	3.20	3.40	3.30	2.80	3.20	2.60	2.50	.....	.....	.....	.....	.....
Guernsey.....	Oriole	2.40	3.50	3.80	4.00	4.20	3.70	4.30	4.10	4.50	3.60	3.80	4.00	4.40	.....	.....	.....	.....	.....	.....
Devon	Ione	2.00	3.60	3.50	3.50	3.60	3.00	2.80	2.70	2.30	2.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevie's Gift ...	0.90	3.00	2.70	2.40	2.30	2.10	1.90	2.20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Average.....	1.73	4.12	4.00	3.73	3.63	3.54	3.64	3.39	3.32	3.04	2.86	3.03	2.98	3.08	2.61	2.25	3.60	3.20	0.80

The following tables present for each breed the average pounds of each food constituent consumed for each month of lactation :

AVERAGE CRUDE FATS IN FOOD CONSUMED BY BREEDS IN EACH MONTH OF LACTATION — POUNDS.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian	8.4	29.0	28.5	30.3	27.8	29.9	27.3	29.1	33.1	35.3	35.2	42.9	35.8	32.2	29.1	28.2	27.1	29.8	.....
Ayrshire	8.2	21.4	22.9	28.4	30.2	28.6	29.6	26.1	26.2	25.5	26.6	27.0	23.2	29.8	25.1	15.7	.....	.....	.....
Jersey	5.5	22.1	24.2	24.0	25.1	24.2	25.6	25.5	26.5	28.2	29.2	28.3	25.6	23.4	24.0	22.6	24.2	18.6	18.5
American Holderness	4.3	19.2	20.4	23.0	19.3	20.2	21.4	22.1	23.2	22.8	22.2	20.3	16.8	15.0	17.8	19.3	.....	.....	.....
Guernsey	9.3	18.7	20.6	25.3	27.6	31.1	32.4	32.3	28.5	25.2	23.1	22.2	22.6	18.5	.....	.....	.....	.....	.....
Devon	8.1	22.3	24.2	26.3	22.3	18.2	18.4	18.5	20.1	21.1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average	7.3	22.1	23.5	26.2	25.4	25.4	25.8	25.6	26.3	26.3	27.3	28.1	24.8	23.8	24.0	21.4	25.6	24.2	18.5

AVERAGE ALBUMINOIDS NOT AMIDES IN FOOD CONSUMED BY BREEDS EACH MONTH OF LACTATION—POUNDS.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian	26.94	75.63	76.85	64.50	64.62	67.94	60.00	66.25	77.87	84.44	77.69	87.62	79.75	77.69	102.00	89.81	85.25	92.94	.....
Ayrshire	16.86	45.85	52.47	62.67	66.41	66.25	66.13	65.23	63.92	71.73	68.23	59.20	57.18	71.37	88.81	56.50	.....	.....	.....
Jersey	12.11	45.90	53.81	60.25	59.02	54.37	58.56	59.03	59.40	58.39	62.69	64.69	68.39	65.81	62.52	61.89	65.56	66.12	46.69
American Holderness... ..	8.88	41.34	48.62	49.88	40.75	44.53	49.31	56.22	50.03	44.12	48.53	47.57	59.31	47.12	55.81	67.81	.....	.....	.....
Guernsey	17.84	36.72	44.71	57.81	64.15	68.87	66.40	67.97	65.07	72.94	77.15	69.59	70.56	56.81	.....	.....	.....	.....	.....
Devon	14.82	47.03	50.22	55.16	61.44	54.46	61.93	57.15	62.31	65.25	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average	16.24	48.75	54.78	58.38	59.40	59.40	60.39	61.97	63.10	66.15	66.86	65.73	66.88	63.75	77.28	69.00	75.40	79.53	46.69

AVERAGE CARBOHYDRATES IN FOOD CONSUMED BY BREEDS EACH MONTH OF LACTATION — POUNDS.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian	102.2	324.6	339.0	348.6	339.5	373.9	416.5	389.7	374.6	344.1	315.7	346.4	358.1	369.7	377.3	477.4	464.6	476.1	.....
Ayrshire	96.1	255.1	262.9	307.7	301.1	296.3	323.7	296.8	327.9	321.9	345.0	317.7	301.9	342.2	332.2	315.8	.....	.....	.....
Jersey	66.0	257.3	245.7	284.7	318.1	307.1	293.4	284.6	275.2	392.6	279.6	309.8	286.9	286.5	310.0	316.9	331.0	247.8	259.3
American Holderness	50.8	233.2	255.9	265.1	290.7	237.2	245.5	219.2	208.3	170.9	219.5	231.4	215.5	261.2	305.5	306.1	.....	.....	.....
Guernsey	97.8	234.9	277.9	293.5	294.6	287.1	271.9	283.4	305.3	305.3	343.3	378.4	322.9	307.7	.....	.....	.....	.....	.....
Devon	75.8	182.7	224.3	244.5	248.7	287.7	276.3	316.1	354.4	344.0	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average	81.5	246.3	267.6	290.7	298.8	298.2	304.5	290.0	307.6	296.5	300.6	316.7	296.9	313.5	331.2	354.0	397.8	362.0	259.3

AVERAGE SUGAR AND STARCH IN FOOD CONSUMED BY BREEDS EACH MONTH OF LACTATION — POUNDS.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian.....	64.1	206.6	225.1	248.5	227.8	251.4	239.1	249.2	264.6	245.8	237.8	237.3	257.8	273.6	213.6	287.4	273.5	277.3	.....
Ayrshire.....	55.3	151.1	173.4	191.5	197.9	198.5	223.2	197.3	205.8	192.8	217.3	197.5	189.0	252.5	180.9	150.1	.....	.....	.....
Jersey.....	45.0	172.4	185.4	187.3	217.1	214.6	212.5	196.0	191.5	207.9	202.5	224.2	193.2	180.1	189.8	196.9	215.1	132.4	80.2
American Holderness.....	38.7	157.1	172.4	176.2	207.4	173.5	175.8	160.0	159.2	110.9	156.7	169.6	120.7	152.7	180.8	185.9	.....	.....	.....
Guernsey.....	55.6	153.6	190.4	168.2	174.2	203.8	193.7	202.0	222.1	199.5	202.3	231.5	219.1	173.6	.....	.....	.....	.....	.....
Devon.....	44.6	118.1	161.0	171.3	157.5	188.0	152.6	181.7	202.9	197.2	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average.....	50.5	159.8	184.6	190.5	197.0	205.	209.5	197.7	207.7	192.3	203.3	212.0	196.0	206.5	191.3	205.1	244.3	204.8	80.2

AVERAGE CRUDE FIBER IN FOOD CONSUMED BY BREEDS EACH MONTH OF LACTATION — POUNDS.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian.....	54.9	130.9	127.6	137.7	132.4	166.8	143.9	130.2	138.4	162.0	134.8	152.5	130.1	117.3	145.9	163.5	151.6	142.4	.....
Ayrshire.....	53.1	115.7	119.4	131.1	131.8	133.0	127.9	118.1	120.1	131.6	136.1	135.6	110.9	110.8	136.0	137.2	.....	.....	.....
Jersey.....	30.6	111.0	94.3	121.2	126.0	114.6	112.3	116.4	121.9	117.1	112.7	111.9	117.3	110.3	114.5	106.1	104.8	105.7	117.0
American Holderness.....	22.4	88.3	97.3	118.3	98.2	85.6	86.2	93.1	84.4	91.9	85.6	77.9	85.3	91.5	98.0	90.8	.....	.....	.....
Guernsey.....	61.4	104.2	101.5	109.6	121.6	135.2	118.3	117.5	107.0	109.2	123.3	124.2	114.6	94.3	.....	.....	.....	.....	.....
Devon.....	42.1	104.1	98.4	102.0	101.8	100.6	103.4	104.8	116.5	104.0	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average.....	44.1	109.0	106.4	120.0	118.6	123.6	115.3	114.2	114.7	119.3	118.5	120.4	111.6	104.8	123.6	124.4	128.2	124.0	117.0

AVERAGE ASH IN FOOD CONSUMED BY BREEDS EACH MONTH OF LACTATION—POUNDS.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian	11.0	35.6	34.1	32.9	33.9	40.4	33.9	33.7	36.5	38.8	33.6	41.6	35.8	38.5	47.6	36.4	35.4	36.6	.....
Ayrshire	11.9	25.7	27.8	30.5	34.1	32.8	34.4	32.5	31.1	34.0	31.9	31.7	29.0	36.0	42.8	25.7	.....	.....	.....
Jersey	7.5	25.3	25.0	30.6	31.7	28.9	28.3	29.1	29.6	29.4	30.5	31.6	33.1	29.3	28.1	26.7	29.8	32.6	21.6
American Holderness	4.8	21.5	25.7	29.4	22.6	22.8	23.1	24.0	21.3	24.5	23.4	24.9	28.3	19.7	23.0	23.6	.....	.....	.....
Guernsey	12.7	24.8	25.8	28.4	30.3	31.9	30.9	32.4	31.8	35.6	33.8	28.4	28.3	23.2	.....	.....	.....	.....	.....
Devon	8.8	25.1	24.7	29.1	29.7	26.3	29.0	23.7	26.6	26.2	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average	9.5	26.3	27.2	30.1	30.4	30.5	29.9	29.2	29.5	31.4	30.6	31.6	30.9	29.3	35.4	28.1	32.6	34.6	21.6

The following tables present for each breed, the average milk yield, the average per cent of each milk constituent, the average pounds of each milk constituent for each month of lactation :

AVERAGE MILK YIELD BY BREEDS EACH MONTH OF LACTATION.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian.....	273.0	884.0	895.0	780.6	750.5	725.1	790.1	655.8	638.1	544.7	560.6	683.0	741.6	662.0	612.9	617.2	563.8	540.3	.....
Ayrshire	246.1	633.7	590.7	629.1	606.3	597.9	609.3	545.7	539.6	467.8	421.1	328.5	375.1	558.0	363.3	122.4	.....	.....	.....
Jersey	344.0	555.0	527.5	480.6	499.2	415.2	417.8	389.3	412.8	411.2	379.5	369.8	317.1	323.8	300.9	311.4	377.9	261.9	87.0
American Holderness	150.8	541.2	558.6	489.1	483.9	416.6	425.0	390.7	407.8	295.3	270.4	391.8	318.2	320.1	267.7	121.3	.....	.....	.....
Guernsey	250.4	491.7	520.0	509.3	529.6	530.1	537.1	527.0	512.2	463.7	451.1	441.2	442.9	324.3	.....	.....	.....	.....	.....
Devon	205.9	418.3	428.4	398.8	362.8	335.2	283.3	318.9	311.9	328.8	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average	245.0	587.3	586.7	547.9	538.7	503.3	510.4	471.2	470.4	418.6	416.5	442.9	439.0	437.6	386.2	293.1	470.9	401.1	87.0

AVERAGE TOTAL SOLIDS IN MILK BY BREEDS EACH MONTH OF LACTATION—PER CENT.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian	13.47	12.32	12.26	12.36	12.62	12.92	13.12	13.32	13.81	14.33	13.60	13.26	12.40	12.35	12.64	12.89	12.96	12.67	.....
Ayrshires	13.63	12.58	12.58	12.68	12.70	12.78	12.73	13.06	13.15	13.51	13.94	15.06	13.87	14.28	14.46	16.31	.....	.....	.....
Jerseys	14.91	14.48	14.56	15.23	15.22	15.57	15.62	15.59	15.48	15.63	15.31	15.48	15.91	16.31	16.49	16.32	16.84	18.95	17.94
American Holderness	14.11	12.16	11.94	12.21	12.44	12.61	12.96	12.41	12.58	12.64	12.76	12.81	13.15	13.34	14.03	15.26	.....	.....	.....
Guernseys,	15.37	14.23	13.63	13.98	14.34	14.48	14.40	14.36	14.53	15.03	15.39	16.18	16.29	16.25	.....	.....	.....	.....	.....
Devons	13.07	13.01	13.30	13.73	14.05	15.07	15.66	15.27	15.43	15.32	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average	14.09	13.13	13.04	13.36	13.56	13.90	14.08	14.00	14.17	14.41	14.20	14.55	14.32	14.50	14.40	15.20	14.90	15.81	17.94

AVERAGE FAT IN MILK BY BREED EACH MONTH OF LACTATION—PER CENT.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian.....	4.86	3.64	3.86	3.64	3.66	3.92	3.55	3.73	3.91	3.95	3.72	3.20	2.99	2.92	3.87	3.30	3.11	2.80	.....
Ayrshires.....	4.15	3.59	3.54	3.60	3.48	3.47	3.48	3.50	3.68	3.83	3.76	3.93	3.69	4.13	3.95	5.30	.....	.....	.....
Jerseys.....	5.42	5.17	5.28	5.69	5.51	5.66	5.69	5.83	5.63	5.65	5.47	5.71	5.76	5.80	5.96	6.20	6.32	8.07	6.30
American Holderness.....	5.04	3.61	3.35	3.44	3.33	3.32	3.35	3.49	3.59	3.56	3.43	3.45	3.78	3.71	3.60	4.75	.....	.....	.....
Guernseys.....	6.14	5.12	4.47	4.67	5.01	4.93	4.83	4.85	4.98	5.14	5.68	5.68	5.70	6.16	.....	.....	.....	.....	.....
Devons.....	3.57	3.70	3.96	4.29	4.44	4.81	5.49	4.98	5.31	4.66	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average.....	4.86	4.13	4.07	4.22	4.23	4.35	4.39	4.39	4.51	4.46	4.41	4.37	4.38	4.54	4.34	4.88	4.71	5.43	6.30

AVERAGE CASEINE IN MILK BY BREEDS EACH MONTH OF LACTATION — PER CENT.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian.....	2.91	2.88	2.83	3.05	3.17	3.58	2.94	2.93	3.67	4.01	3.98	3.74	3.86	3.68	4.29	4.22	3.92	3.39	.....
Ayrshires	3.37	2.97	2.98	3.35	3.44	3.42	3.19	3.29	3.61	3.63	3.83	4.24	3.98	3.79	4.47	5.63	.....	.....	.....
Jerseys	3.50	3.46	3.71	3.98	3.43	3.72	4.02	3.95	4.06	3.92	4.05	4.31	4.14	4.74	4.26	4.18	4.37	4.44	5.65
American Holderness	3.40	2.87	3.20	2.97	2.70	3.13	3.37	3.27	3.60	3.37	3.81	3.75	3.89	4.63	3.60	3.80	.....	.....	.....
Guernseys	4.00	2.88	3.01	3.56	3.51	3.56	3.67	3.74	3.83	4.23	4.07	4.20	4.56	4.05	.....	.....	.....	.....	.....
Devons	4.00	3.27	3.65	3.63	3.70	4.29	3.91	3.90	4.04	3.73	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average	3.53	3.05	3.23	3.42	3.32	3.61	3.51	3.51	3.80	3.81	3.94	4.04	4.08	4.17	4.15	4.45	4.14	3.91	5.66

AVERAGE SUGAR IN MILK BY BREEDS EACH MONTH OF LACTATION—PER CENT.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian	5.06	5.12	4.89	4.96	5.31	4.66	5.85	5.93	5.49	5.52	5.22	5.55	4.86	5.00	3.75	4.59	5.11	5.72	.....
Ayrshire	5.40	5.32	5.33	5.09	5.12	5.21	5.38	5.51	5.18	5.36	5.59	5.73	5.41	5.57	5.26	4.79	.....	.....	.....
Jersey	5.24	5.12	4.81	5.14	5.52	5.41	5.17	5.03	5.10	5.32	5.03	4.72	5.25	4.96	5.51	5.17	5.46	5.55	5.11
American Holderness	5.06	4.97	4.71	5.11	5.69	5.68	5.58	4.94	4.72	5.04	4.76	4.90	4.77	4.29	6.15	5.86	.....	.....	.....
Guernsey	4.43	5.47	5.38	5.01	5.07	5.30	5.11	5.07	4.99	4.91	4.91	5.56	5.24	5.28	.....	.....	.....	.....	.....
Devon	4.81	5.25	4.96	5.07	5.07	5.20	5.44	5.62	5.33	6.23	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average	5.00	5.20	5.01	5.06	5.29	5.24	5.42	5.35	5.13	5.39	5.10	5.29	5.10	5.02	5.16	5.10	5.28	5.63	.....

AVERAGE ASH IN MILK BY BREEDS EACH MONTH OF LACTATION — PER CENT.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian.....	0.64	0.68	0.68	0.71	0.48	0.76	0.78	0.73	0.74	0.85	0.68	0.77	0.69	0.75	0.73	0.78	0.82	0.76	.....
Ayrshire.....	0.70	0.69	0.70	0.63	0.65	0.67	0.68	0.75	0.67	0.68	0.70	0.81	0.78	0.79	0.78	0.62	.....	.....	.....
Jersey.....	0.73	0.73	0.74	0.75	0.76	0.78	0.73	0.78	0.69	0.74	0.76	0.73	0.75	0.76	0.75	0.77	0.69	0.89	0.87
American Holderness.....	0.60	0.71	0.68	0.69	0.73	0.73	0.65	0.71	0.66	0.66	0.76	0.71	0.71	0.71	0.68	0.85	.....	.....	.....
Guernsey.....	0.79	0.76	0.76	0.73	0.75	0.69	0.79	0.70	0.78	0.75	0.74	0.83	0.78	0.76	.....	.....	.....	.....	.....
Devon.....	0.69	0.79	0.72	0.74	0.83	0.76	0.82	0.77	0.75	0.70	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average.....	.69	.72	.71	.70	.70	.73	.74	.74	.71	.73	.72	.77	.74	.75	.74	.75	.75	.82	.87

AVERAGE TOTAL SOLIDS IN MILK BY BREEDS EACH MONTH OF LACTATION—POUNDS.

BREED.	First.*	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian.....	36.73	408.91	109.73	97.50	94.71	93.63	103.66	87.35	88.12	78.10	76.20	90.60	91.90	81.80	77.50	79.50	73.00	68.40	.....
Ayrshire.....	33.98	80.30	74.47	73.84	77.18	76.66	77.70	70.91	70.84	62.60	57.02	45.29	50.40	79.70	52.50	20.00	.....	.....	.....
Jersey.....	50.71	80.38	76.93	73.01	75.79	64.89	65.28	61.16	64.13	64.50	58.06	57.61	50.96	52.90	49.80	51.10	63.60	49.60	15.60
Guernsey.....	20.98	65.83	66.64	59.67	60.20	52.52	55.03	48.46	51.20	37.15	34.20	50.20	41.80	42.70	37.50	18.50	.....	.....	.....
American Holderness.....	38.79	70.18	71.02	71.11	75.85	76.64	77.25	75.55	74.85	69.70	69.75	71.20	72.05	52.70	.....	.....	.....	.....	.....
Devon.....	27.20	54.45	56.95	54.55	50.55	50.15	43.95	48.55	49.10	50.40	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average.....	34.73	76.68	75.96	72.61	72.38	69.09	70.48	65.33	66.21	60.41	59.03	62.98	61.42	61.96	54.32	42.28	68.30	59.00	15.60

* The first month is in every case the remainder of the month after calving.

AVERAGE FATS IN MILK BY BREEDS EACH MONTH OF LACTATION — POUNDS.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian.....	13.27	32.18	34.55	28.41	27.46	28.42	28.05	24.46	24.95	21.52	20.80	21.90	22.20	19.30	23.70	20.40	17.50	15.10	.....
Ayrshire.....	10.83	23.36	21.14	22.87	21.34	20.92	21.31	18.91	19.86	17.62	15.26	11.97	13.90	23.00	14.40	6.50	.....	.....	.....
Jersey	18.44	28.57	27.89	27.14	27.49	23.68	23.82	22.83	23.36	23.21	20.77	21.50	18.53	18.67	18.00	19.10	23.90	21.10	5.50
American Holderness.....	7.37	19.56	18.75	16.89	16.12	13.88	14.25	13.63	14.65	10.90	9.10	13.50	12.00	11.90	9.60	14.20	.....	.....	.....
Guernsey.....	15.79	25.27	23.38	23.75	26.51	26.09	25.95	25.65	25.65	23.85	25.60	24.40	24.80	20.00	.....	.....	.....	.....	.....
Devon.....	7.50	15.55	16.95	16.85	16.80	15.95	15.20	15.80	16.60	15.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average	12.20	24.08	23.78	22.65	22.59	21.49	21.43	20.21	20.84	18.73	18.31	18.65	18.29	18.57	16.42	15.05	20.70	18.10	5.50

AVERAGE CASEINE IN MILK BY BREEDS EACH MONTH OF LACTATION — POUNDS.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian.....	7.94	25.46	25.32	23.80	23.77	25.96	23.23	19.22	23.42	21.82	22.30	25.50	28.60	24.40	26.30	26.00	22.10	18.30	.....
Ayrshire.....	8.17	19.07	17.65	20.88	20.87	20.36	19.25	17.86	19.36	16.82	15.47	11.83	14.30	21.20	16.20	6.90	.....	.....	.....
Jersey.....	11.68	19.36	19.79	17.64	17.19	15.62	16.79	15.40	16.79	16.10	15.35	15.98	13.19	15.20	12.87	13.00	16.50	11.60	4.90
American Holderness.....	5.22	15.68	17.87	14.49	13.05	13.04	14.32	12.75	14.70	9.95	9.90	14.70	12.40	14.80	9.60	4.60	.....	.....	.....
Guernsey.....	9.79	14.33	15.71	18.15	18.58	18.93	19.70	19.70	19.65	19.65	18.70	18.40	20.10	13.10	.....	.....	.....	.....	.....
Devon.....	8.30	13.65	15.70	14.45	13.60	14.25	11.10	12.60	12.60	12.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average.....	8.52	17.91	18.67	18.24	17.84	18.03	17.40	16.26	17.75	16.11	16.34	17.28	17.72	17.74	16.24	12.62	19.30	14.95	4.90

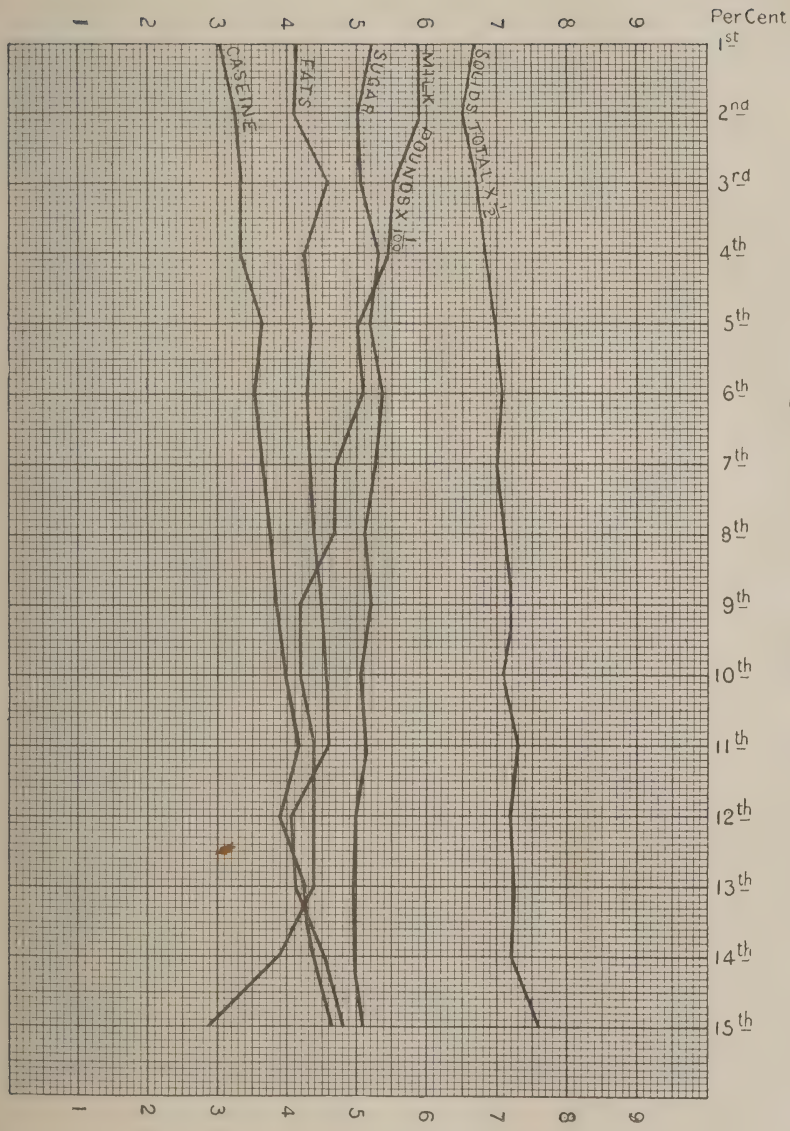
AVERAGE SUGAR IN MILK BY BREEDS EACH MONTH OF LACTATION—POUNDS.

BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian.....	13.81	45.26	43.76	38.72	39.86	33.79	46.22	38.89	35.03	30.07	29.30	37.90	36.00	33.10	23.00	28.30	28.10	30.90	.....
Ayrshire.....	13.29	33.71	31.58	32.14	31.04	31.39	33.00	30.16	28.06	24.93	23.45	18.90	19.40	31.10	19.10	5.00	.....	.....	.....
Jersey.....	18.11	28.36	25.33	24.65	27.47	22.39	21.59	19.54	21.11	22.17	19.06	17.48	16.89	16.50	16.73	16.63	20.60	14.60	4.40
American Holderness.....	7.65	26.84	26.25	24.30	27.53	22.60	23.70	19.31	19.20	14.45	13.20	19.20	15.20	13.70	16.50	7.10	.....	.....	.....
Guernsey.....	11.25	26.87	28.00	25.60	26.83	27.97	27.45	26.55	25.55	22.70	22.15	24.75	23.60	17.10	.....	.....	.....	.....	.....
Devon.....	9.95	21.95	21.20	20.30	18.40	17.40	15.25	17.75	16.60	20.50	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average.....	12.34	30.50	29.35	27.70	28.52	25.92	27.85	25.37	24.26	22.47	21.43	23.65	22.22	22.30	18.83	14.26	24.70	22.75	4.40

AVERAGE ASH IN MILK BY BREEDS EACH MONTH OF LACTATION — POUNDS.

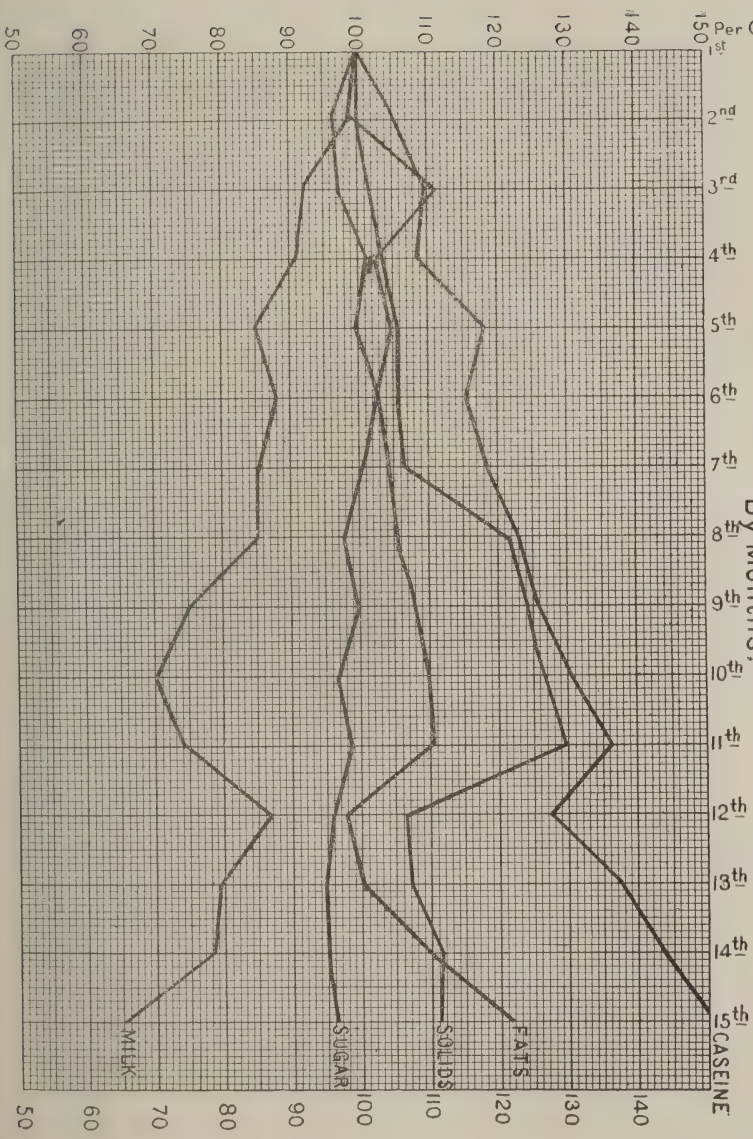
BREED.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Holstein-Friesian.....	1.70	6.00	6.10	5.50	3.60	5.50	6.20	4.80	4.70	4.60	3.80	5.30	5.10	5.00	4.50	4.80	4.60	4.10	.....
Ayrshire.....	1.70	4.42	4.10	3.92	3.92	4.00	4.20	4.00	3.58	3.25	2.80	2.50	2.75	4.40	2.80	0.70	.....	.....	.....
Jersey.....	2.47	4.10	3.33	3.57	3.77	3.20	3.07	3.00	2.90	3.03	2.87	2.67	2.33	2.47	2.20	2.33	2.60	2.30	0.80
American Holderness.....	0.75	3.85	3.85	3.40	3.05	3.00	2.75	2.75	2.65	1.85	2.00	2.80	2.20	2.30	1.80	1.00	.....	.....	.....
Guernsey.....	1.95	3.70	3.90	3.75	3.95	3.65	4.20	3.65	3.95	3.45	3.30	3.60	3.50	2.50	.....	.....	.....	.....	.....
Devon.....	1.45	3.30	3.10	2.95	2.95	2.55	2.35	2.45	2.30	2.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average.....	1.67	4.23	4.16	3.85	3.54	3.65	3.80	3.44	3.35	3.08	2.95	3.37	3.18	3.33	2.82	2.21	3.60	3.20	0.80

General Average All Breeds each Month of Lactation. A

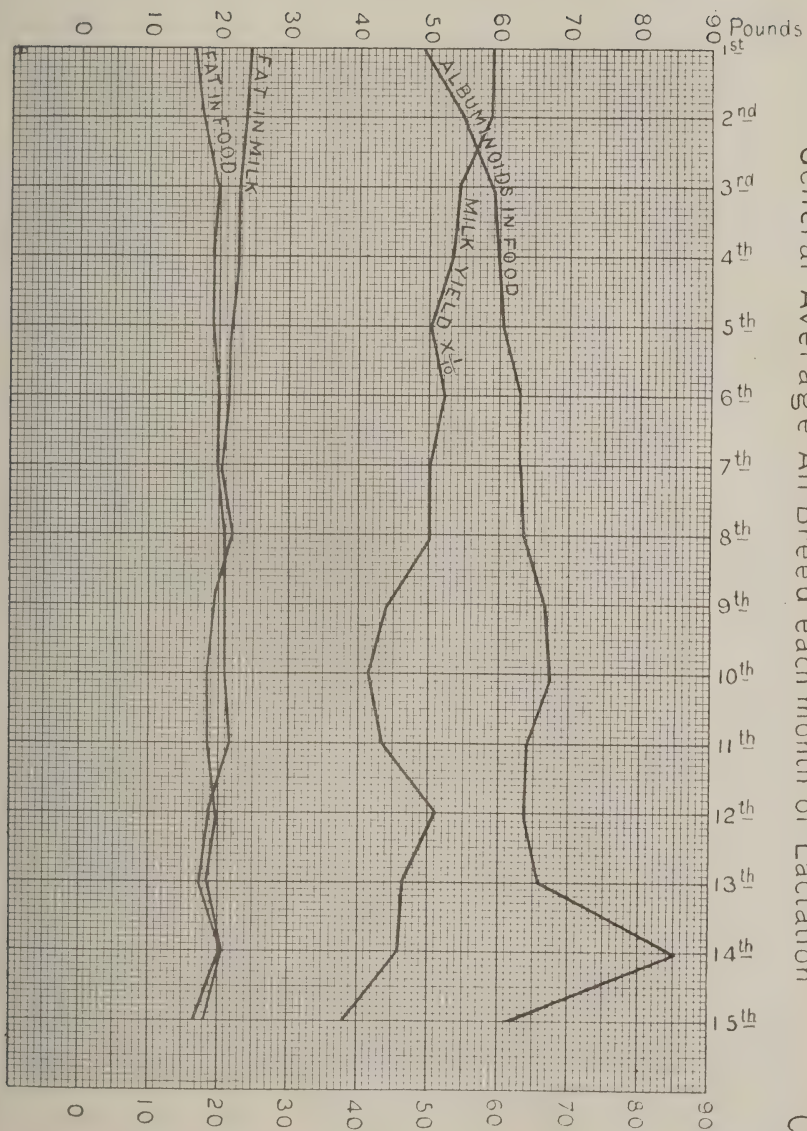


B

Percentage
Variation in Milk
Constituents during Lactation
By Months,

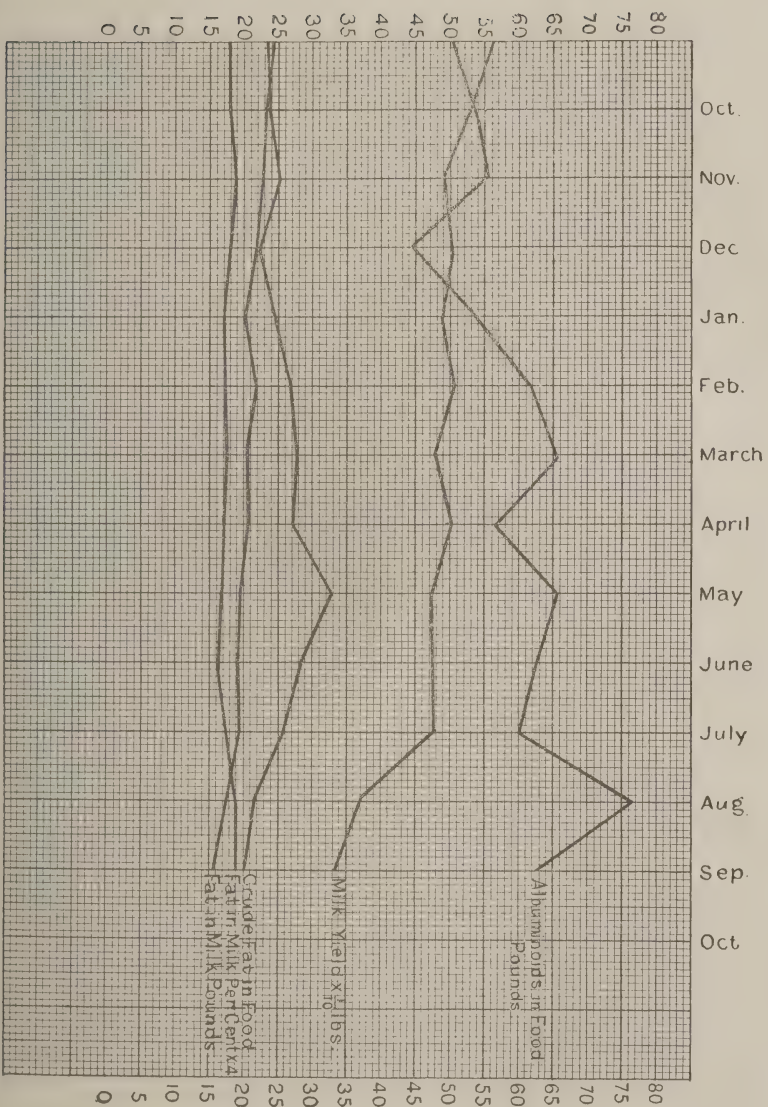


General Average All Breed each month of Lactation



Average Of All Animals each Month of the Year.

D



The following table presents the general averages for all breeds during each month of lactation:
GENERAL AVERAGES OF ALL BREEDS EACH MONTH OF LACTATION.

	First.*	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.
Milk yield, pounds	245.00	587.30	586.70	547.90	538.70	503.30	510.40	471.20	470.40	418.60	416.50	442.90	439.00	437.60	386.20	293.10	470.90	401.10
Total solids, per cent.	14.09	13.13	13.04	13.36	13.56	13.90	14.08	14.00	14.17	14.41	14.20	14.55	14.32	14.50	14.40	15.20	14.90	15.81
Fats, per cent.	4.86	4.13	4.07	4.22	4.23	4.35	4.39	4.39	4.51	4.46	4.41	4.37	4.38	4.54	4.34	4.88	4.71	5.43
Caseine, per cent.	3.53	3.65	3.23	3.42	3.32	3.61	3.51	3.51	3.80	3.81	3.94	4.04	4.08	4.17	4.15	4.45	4.14	3.91
Sugar, per cent.	5.00	5.20	5.01	5.05	5.29	5.24	5.42	5.35	5.13	5.39	5.10	5.29	5.10	5.02	5.16	5.10	5.28	5.63
Ash, per cent.	0.69	0.72	0.71	0.70	0.70	0.73	0.74	0.74	0.71	0.73	0.72	0.77	0.74	0.75	0.74	0.75	0.75	0.82
Total solids, pounds	34.73	76.68	75.96	72.61	72.38	69.09	70.48	65.33	66.21	60.41	59.05	62.98	61.42	61.96	54.32	42.28	68.30	59.00
Fats, pounds.	12.20	24.08	23.78	22.65	22.59	21.49	21.43	20.21	20.84	18.73	18.31	18.65	18.29	18.57	16.42	15.05	20.70	18.10
Caseine, pounds.	8.52	17.91	18.67	18.24	17.84	18.03	17.40	16.26	17.75	16.11	16.84	17.28	17.72	17.74	16.24	12.62	19.30	14.95
Sugar, pounds.	12.34	30.50	29.35	27.70	28.52	25.92	27.85	25.37	24.26	22.47	21.43	23.65	22.22	22.30	18.83	14.26	24.70	22.75
Ash, pounds.	1.67	4.23	4.16	3.85	3.54	3.65	3.80	3.44	3.35	3.08	2.95	3.37	3.18	3.33	2.82	2.21	3.60	3.20
Albuminoids in foods, pounds.	16.24	48.75	51.78	53.38	59.40	59.40	60.39	61.97	63.10	66.15	66.86	65.73	66.88	63.75	77.28	69.00	75.40	79.53
Ash in foods, pounds.	9.50	26.30	27.20	30.10	30.40	30.50	29.90	29.20	29.50	31.40	30.60	31.60	30.90	29.30	35.40	28.10	32.60	34.60
Crude fiber in foods, pounds.	44.10	109.00	106.40	120.00	118.60	122.60	115.30	114.20	114.70	119.30	118.50	120.40	111.60	104.80	123.60	124.40	128.20	124.00
Nitrogen free extract in foods, pounds.	81.50	246.30	267.60	290.70	298.80	298.20	304.50	290.00	307.60	296.50	300.60	316.70	296.90	313.50	331.20	354.00	397.80	362.00
Crude fats in foods, pounds.	7.30	22.10	23.50	26.20	25.40	25.40	25.80	25.60	26.30	26.30	27.30	28.10	24.80	23.80	24.00	21.40	25.60	24.20
Sugars and starch in foods, pound.	50.50	169.80	184.60	190.50	197.00	205.00	209.50	197.70	207.70	192.30	203.30	212.00	196.00	206.50	191.30	205.10	244.30	204.80

* First month is remainder after calving.

The following table presents the average percentage changes for all breeds in milk yield, the per cent and pounds of each milk and food constituent during each month of lactation:

MONTH OF LACTATION.	Quantity of milk	Per cent solids.	Per cent fat.	Per cent caseine.	Per cent sugar.	Per cent ash.	Pounds solids.	Pounds fat.	Pounds caseine.	Pounds sugar.	Pounds ash.	Pounds crude fat.	Pounds albuminoids.	Pounds starch and sugar.	Pounds nitrogen free extract.	Pounds fiber.	Pounds ash.
First	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Second	99.9	99.3	98.5	105.9	96.3	98.6	99.1	98.8	104.2	96.2	98.3	106.3	112.4	115.5	108.6	97.6	103.4
Third	93.3	101.7	102.2	112.1	97.3	98.6	94.7	94.1	101.8	90.8	91.0	118.6	119.8	119.1	118.0	110.1	114.4
Fourth	91.7	103.3	102.4	108.9	101.7	97.2	94.4	83.8	99.6	93.5	83.7	114.9	121.8	123.3	121.2	108.8	115.6
Fifth	85.7	105.9	105.3	118.4	100.8	101.4	90.1	80.2	100.7	85.0	86.3	114.9	121.8	128.3	121.1	112.5	116.0
Sixth	86.9	107.2	106.3	115.1	104.2	102.8	91.9	89.0	97.1	91.3	89.8	116.7	123.9	131.1	123.6	105.8	113.7
Seventh	80.2	106.6	106.3	115.1	102.9	102.8	85.2	83.9	90.8	83.2	81.3	115.8	127.1	123.7	117.7	104.8	111.0
Eighth	80.1	107.9	109.2	124.6	98.7	98.6	86.3	86.5	99.1	79.5	79.2	114.5	139.7	129.4	124.9	105.2	112.1
Ninth	71.3	109.7	108.0	124.9	103.7	101.4	78.8	77.8	89.9	73.6	72.8	114.5	135.7	120.3	120.4	109.4	119.4
Tenth	70.9	108.1	106.8	129.2	98.1	100.0	77.0	76.0	91.2	70.3	69.7	123.5	137.2	127.2	122.0	108.7	116.3
Eleventh	75.4	110.8	105.8	132.4	101.7	106.9	82.1	77.4	95.5	77.5	79.7	127.1	134.8	132.7	128.6	110.5	120.2
Twelfth	74.7	109.1	106.0	133.8	98.1	102.8	80.1	75.5	98.9	72.8	75.2	112.2	137.2	122.6	120.5	102.4	117.1
Thirteenth	74.5	110.4	109.9	136.7	96.5	104.2	80.8	77.1	99.1	73.1	78.7	107.7	130.8	129.2	127.3	96.2	111.4
Fourteenth	65.8	109.7	105.1	136.1	99.2	102.8	70.8	68.2	90.7	61.7	66.7	108.6	158.5	119.7	134.5	113.4	134.6
Fifteenth	50.0	115.8	118.2	145.9	98.1	104.2	55.1	62.5	70.5	46.8	52.2	96.8	141.5	128.3	143.7	114.1	106.8
Sixteenth	80.2	113.5	114.0	135.7	101.9	104.2	89.1	86.0	107.8	81.0	85.1	115.8	154.7	152.9	161.5	117.6	124.0
Seventeenth	68.3	120.4	131.5	128.2	108.3	113.9	76.9	75.2	83.5	74.6	75.6	109.5	163.1	128.2	146.9	113.8	131.6

The following table presents the average milk yield, fat in milk, crude fat and albuminoids in food, as also weight of the animals for each month in the year, and the diagrams A, B, C, D, graphically represent certain of the facts set forth in the preceding tables:

AVERAGES OF ALL ANIMALS FOR EACH MONTH OF THE YEAR.

	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.
Average milk yield, pounds.....	563.40	533.80	492.80	505.70	487.30	507.80	478.60	502.20	476.40	474.50	477.90	369.50	337.50
Average fat in milk, per cent.....	4.47	4.53	4.73	4.53	4.28	4.40	4.36	4.24	4.10	4.08	4.42	4.85	4.86
Average fat in milk, pounds.....	24.70	23.30	22.70	21.60	20.00	21.80	20.40	20.90	19.20	19.00	19.70	17.20	15.50
Average crude fat in food, pounds.....	23.70	23.00	25.10	21.90	24.20	26.80	27.60	26.90	32.80	28.30	25.70	21.60	20.00
Pure fat in food (75.3 per cent).....	17.90	18.10	18.90	16.50	18.20	20.20	20.80	20.20	24.70	21.30	19.40	16.30	15.10
Average albuminoids in food, pounds.....	50.82	53.18	55.51	44.31	53.71	61.70	65.67	56.37	65.30	62.21	60.34	76.25	62.37
Average weight animals.....	850.00	864.00	870.00	842.00	836.00	822.00	814.00	822.00	829.00	843.00	834.00	889.00	893.00

The following tables give the cost of food in dollars for each animal for each month and day of lactation and the average cost per pound of milk and per pound of fat in milk:

COST OF FOOD EACH MONTH OF LACTATION.

Breed.	NAME OF ANIMAL.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Fourteenth.	Fifteenth.	Sixteenth.	Seventeenth.	Eighteenth.	Nineteenth.
Hol.-Friesian ..	Esel 2d	1.00	5.24	5.67	5.83	5.06	5.81	5.73	5.12	5.09	5.48	5.44	5.25	5.20	4.50	5.11	5.87	5.87	6.11	.....
Ayrshire	Miss Flow 5th	1.89	4.17	4.71	5.62	6.99	4.73	5.28	4.65	4.78	5.22	4.95	2.82	.....	.....	.....	.....	.....	.....	.....
Ayrshire	Queen Duchess ..	.42	4.06	3.99	4.73	5.21	5.02	5.37	4.83	5.35	5.16	5.26	4.87	4.86	3.31	4.35	3.10	.32	.....	.....
Ayrshire	Manton Belle	1.82	3.37	4.27	5.01	4.85	4.60	4.32	4.43	4.24	4.39	4.82	4.50	1.87	.....	.....	.....	.....	.....	.....
Ayrshire	Junietta Peerless ..	1.12	2.79	3.49	4.01	3.82	3.83	3.70	3.63	4.09	4.14	4.22	.....	.....	.....	.....	.....	.....	.....	.....
Jersey	Gilderbloom	2.08	4.52	4.84	4.49	4.63	4.55	4.47	3.64	3.83	3.63	3.82	3.79	3.47	3.80	3.66	3.85	.....	.....	.....
Jersey	Countess Flavia ..	1.05	4.49	6.26	4.61	5.19	4.93	4.77	5.38	5.05	5.23	4.46	5.09	4.52	4.48	3.84	3.88	3.78	3.14	2.55
Jersey	Barbara Allen .....	.27	3.31	4.46	5.01	4.74	4.80	4.30	4.76	4.35	4.20	4.18	4.24	4.13	4.01	3.96	4.57	4.73	.....	.....
Am. Holderness ..	Maggie 6th .....	.25	3.70	4.74	4.28	3.95	3.54	3.93	3.61	3.82	3.66	3.63	3.54	3.40	3.88	3.99	3.98	.....	.....	.....
Am. Holderness ..	Nellie 6th	1.01	3.73	4.57	3.73	3.90	3.45	3.46	3.35	3.36	1.25	2.58	2.50	2.36	.....	.....	.....	.....	.....	.....
Guernsey	Rosette Ford	1.41	3.83	4.60	4.16	4.61	4.85	4.53	4.18	3.20	4.12	4.03	4.57	4.55	3.73	.....	.....	.....	.....	.....
Guernsey	Oricle	1.69	2.62	3.49	4.50	4.35	4.47	4.17	4.24	4.12	4.04	4.75	4.78	4.94	.....	.....	.....	.....	.....	.....
Devon	Ione	1.59	3.26	3.91	3.76	3.89	3.76	3.70	3.20	4.26	4.29	.....	.....	.....	.....	.....	.....	.....	.....	.....
Devon	Genevieve's Gift ..	.80	2.40	2.91	2.88	2.76	3.15	3.16	3.21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

* Remainder of month after calving.

COST OF FOOD EACH MONTH OF LACTATION — (Concluded).

Breed.	NAME OF ANIMAL.	Total cost.	Number of days.	Average cost per day.	Total milk yield.	Total fat yield.	Average cost of milk.	Average cost of fat.
				Cents.	Pounds.	Pounds.	Cents.	Cents.
Holstein-Friesian	Esel 2d	\$83.98	534	17.60	11,918	494.5	.788	22.1
Ayrshire	Miss Flow 5th	55.81	361	15.46	5,251	200.5	1.063	29.3
Ayrshire	Queen Duchess	69.89	465	15.03	9,489	425.8	.737	16.4
Ayrshire	Manton Belle	52.49	376	13.96	6,796	230.4	.772	22.7
Ayrshire	Junietta Peerless	38.84	330	11.77	4,792	139.9	.811	27.7
Jersey	Gilderbloom	63.07	479	13.17	5,118	285.7	1.232	22.1
Jersey	Countess Flavia	82.70	561	14.74	8,024	477.1	1.031	17.3
Jersey	Barbara Allen	70.04	490	14.30	6,950	476.4	1.078	14.7
American Holderness	Magie 6th	57.93	463	12.51	6,132	220.2	.937	26.6
American Holderness	Nellie 6th	39.25	322	12.19	4,095	142.8	.968	27.5
Guernsey	Rosette Ford	56.37	413	13.65	6,110	307.8	.923	18.3
Guernsey	Orlolo	52.16	390	13.37	6,627	335.9	.787	15.5
Devon	Ione	35.62	300	11.87	3,541	162.6	1.006	21.9
Devon	Genevie's Gift	21.27	231	9.21	2,191	108.2	.971	19.7
	Average	.....	.....	13.49	.....	.....	.935	21.6

The following table presents the relative cost of production of milk, and of fat in milk, for each animal, and for the several breeds:

RELATIVE COST OF PRODUCTION OF MILK AND FAT.

Milk.	Ratio.	Fat.	Ratio.
Queen Duchess	100	Barbara Allen	100
Manton Belle	105	Oriole	106
Oriole	107	Queen Duchess.....	112
Esel 2d	107	Countess Flavia.....	118
Junietta Peerless	110	Rosette Ford	124
Rosette Ford.....	125	Genevie's Gift.....	134
Maggie 6th	127	Ione	149
Nellie 6th.....	130	Gilderbloom	150
Genevie's Gift.....	132	Esel 2d.....	150
Ione	137	Manton Belle	154
Countess Flavia ...	140	Maggie 6th	181
Miss Flow 5th.....	144	Nellie 6th.....	187
Barbara Allen	146	Junietta Peerless.....	188
Gilderbloom	167	Miss Flow 5th	199

RELATIVE COST BY BREEDS.

Holstein-Friesian	100	Guernseys	100
Ayrshires	107	Jerseys.....	107
Guernseys	108	Devons.....	124
American Holderness	121	Holstein-Friesian	130
Devons	126	Ayrshires.....	160
Jerseys	141	American Holderness	160

By reference to the table (page 110) which gives the relative cost of production of milk and of milk fat (which is practically the same relation for production of butter) of the several animals and breeds, it is obvious that the dairyman should first decide whether he desires to produce milk or butter from his herd since, as will be seen from the tables, these cows, cared for alike and fed the same foods, differed widely in relative value for production of milk and milk fat, the relative cost in production of milk varying in individuals from 100 to 167 and in breeds from 100 to 141; while in the production of milk fat they varied in individuals from 100 to 199, and in breeds from 100 to 160.

It will be seen also that in individual cases we find certain cows standing high in the list for the economical production of both milk and butter, while there are also certain ones which are relatively poor for both milk and butter, but these are exceptional cases, since as a rule the Guernseys and Jerseys are noticeable for their low cost in butter production, while the Holstein-Friesians, Ayrshires and Guernseys are characterized by their relatively low cost of milk production. The Devons and American Holderness stand more nearly midway between these other breeds. The dairyman needs therefore to select the breed best suited to his purpose, and also to thoroughly test the relative value of the individuals in his herd of whatever breed or grade. These two points may be regarded as of prime importance.

In the table (page 109) which gives the daily cost of the food fed these animals there has been no allowance made for the fertilizing value of the manure secured, which if carefully husbanded would equal fully seventy per cent of the market value of the food, and thus reducing this daily ration, the market value of which averaged, as will be seen, 13 49 cents to only 4.05 cents per animal per day.

It will be seen from the table (page 40) that these animals received as a part of their ration grain every day, and while the cost of food was low the animals have thrived and been maintained in good condition, their average weight having increased, as is seen in table on page 107, from 850 pounds to 893 pounds in twelve months.

The average weight of the cows for a year was 816 pounds, and the average daily amount of dry matter in their food was 17.34 pounds, or for 1,000 pounds weight 21.2 pounds.

The following table gives for seven cows the average yield of milk as also of milk fat, and the pounds of albuminoids and crude fat present in the foods fed during November and December. The rest of the herd had ceased giving milk or were so nearly dry that they were excluded.

These results are highly interesting as showing a change in milk production in cows averaging a year in lactation.

We find here a reverse in the average results since we have :

1. An increase in milk yield of 5.5 per cent.
2. An increase in the milk fat produced of 2.4 per cent.
3. A decrease in the per cent of fat in the milk of 3.1 per cent.

By reference to table on page 77, we shall see that as an average we found between the twelfth and thirteenth months of lactation:

1. A decrease in milk yield with eight cows of twelve per cent.
2. A decrease in fat produced of 5.5 per cent.
3. An increase in per cent of fat in milk of 1.7 per cent.

We observe that there was an increase of albuminoids in the food of December of 7.6 per cent over the amount in November, and an increase of the amount of crude fat in the food of 8.4 per cent.

The change in the quality of the food was an increase of fifty per cent in the amount of ensilage, and a decrease of one-third in the amount of hay fed, also the substitution during December of cotton-seed meal for corn meal in the grain mixture.

The nutritive ratio for November was 1. to 5.8 and for December one to 5.2.

MONTHS OF LACTATION.		November - Milk		December - Milk		November - Fat in milk.		December - Fat in milk.		November - Fat in milk.		December - Fat in milk.		November - Al- buminoids in food.		December - Al- buminoids in food.		November - Fat in food.		December - Fat in food.	
		Pounds.	Per cent.	Pounds.	Per cent.	Pounds.	Per cent.	Pounds.	Per cent.	Pounds.	Per cent.	Pounds.	Per cent.	Pounds.	Per cent.	Pounds.	Per cent.	Pounds.	Per cent.	Pounds.	Per cent.
17th and 18th ...	Esel 2d	563.8	3.11	540.3	2.80	17.5	15.1	85.3	92.9	27.1	29.8	27.1	29.8	85.3	92.9	27.1	29.8	27.1	29.8	27.1	29.8
10th and 11th ...	Junietta Peerless.....	410.1	2.91	434.9	2.93	11.9	12.7	62.6	64.4	19.3	20.6	19.3	20.6	62.6	64.4	19.3	20.6	19.3	20.6	19.3	20.6
15th and 16th ...	Gilderbloom	155.9	5.87	164.3	6.45	9.2	10.6	52.9	58.6	17.1	19.0	17.1	19.0	52.9	58.6	17.1	19.0	17.1	19.0	17.1	19.0
15th and 16th ...	Barbara Allen	340.7	6.16	361.9	6.27	21.0	22.7	66.3	71.9	21.2	23.1	21.2	23.1	66.3	71.9	21.2	23.1	21.2	23.1	21.2	23.1
12th and 13th ...	Oriole	495.5	5.24	538.4	5.21	26.0	28.1	69.1	75.1	22.1	24.1	22.1	24.1	69.1	75.1	22.1	24.1	22.1	24.1	22.1	24.1
9th and 10th ...	Ione	311.9	5.31	328.8	4.66	16.6	15.3	62.3	65.3	20.1	21.1	20.1	21.1	62.3	65.3	20.1	21.1	20.1	21.1	20.1	21.1
7th and 8th ...	Genevie's Gift	243.2	6.31	291.7	5.51	15.4	16.1	46.6	49.0	15.1	16.1	15.1	16.1	46.6	49.0	15.1	16.1	15.1	16.1	15.1	16.1
12th and 13th ...	Average	380.2	4.99	380.0	4.83	16.8	17.2	63.4	68.2	20.3	22.0	20.3	22.0	63.4	68.2	20.3	22.0	20.3	22.0	20.3	22.0
	Ratio	100	100	105.5	96.9	100	102.4	100	107.6	100	108.4	100	108.4	100	107.6	100	108.4	100	108.4	100	108.4

The following table gives the amount of food fed and its leading constituents, as also the milk yield and the amount of milk fat produced during five months, which averaged for the thirteen animals under this experiment, the eighth to the twelfth, both inclusive, of lactation, during which period the changes in the proximate composition of the food was most marked.

The percentage of changes in the albuminoids, sugar and starch and the crude fat in the food, as also in the milk yield and milk fat produced during this period of five months are as follows :

	Albuminoids not amides, in food.	Sugars and starch in food.	Crude fat in food.	Milk yield. Pounds.	Per cent fat in milk.	Pounds fat in milk.
June.....	100	100	100	100	100	100
July.....	94	115	85	100	99	99
August.....	91	123	77	92	106	97
September.....	115	88	65	74	117	86
October.....	95	110	61	68	117	77

The above average as also the details of the table which follows is of much interest in connection with the question as to the function of the several food constituents in the animal economy.

It will be seen that while the albuminoids in the food was increased nearly twenty-seven per cent the milk yield diminished twenty per cent, while the milk fat diminished but twelve per cent.

In the detailed table as an average 78.93 pounds of albuminoids were fed during September, the average milk yield during the same month being 375.7 pounds, while during the previous month 62.26 pounds of albuminoids were fed and the milk yield was 467.5 pounds; this is a falling off in the milk yield of about twenty-per cent, while as we see upon page 77 the average falling off in milk between the tenth and eleventh month of lactation was upon an average 430.6 pounds to 402.2 pounds or 6.6 per cent.

Again between September and October the average amount of albuminoids fed dropped from 78.93 pounds to 64.67 pounds or

about eighteen per cent, while the average milk yield dropped from 375.7 pounds to 344.8 pounds, or eight per cent, but by the table, page 77, we see that the average falling off in milk yield between the twelfth and thirteenth month of lactation was less than five per cent, so that the large reduction of eighteen per cent in albuminoids fed did not diminish the milk yield over three per cent.

RELATION OF MILK YIELD AND COMPOSITION TO CERTAIN FOOD CONSTITUENTS.

	NAME OF ANIMAL.	JUNE.						JULY.						AUGUST.					
		Milk yield, pounds.	Albuminoids in food, pounds.	Fat in food, pounds.	Sugar and starch in food, pounds.	Fat in milk, per cent.	Fat in milk, pounds.	Milk yield, pounds.	Albuminoids in food, pounds.	Fat in food, pounds.	Sugar and starch in food, pounds.	Fat in milk, per cent.	Fat in milk, pounds.	Milk yield, pounds.	Albuminoids in food, pounds.	Fat in food, pounds.	Sugar and starch in food, pounds.	Fat in milk, per cent.	Fat in milk, pounds.
June was month of lactation.																			
Twelfth	Esel 2d	688.0	87.62	49.9	237.3	3.20	21.9	741.6	79.75	35.8	257.8	2.99	22.2	662.0	77.69	32.2	273.6	2.92	19.3
Twelfth	Queen Duchess	680.9	82.62	41.2	222.7	3.60	24.5	673.5	75.25	34.1	249.9	3.72	25.1	588.0	71.37	29.8	252.5	4.13	23.0
Seventh	Manton Belle	652.1	75.06	38.2	197.1	3.36	21.9	657.3	69.75	32.0	224.2	3.22	21.2	588.7	66.31	28.2	238.7	3.42	20.1
Fourth	Miss Flow 5th	591.5	69.25	34.5	184.7	3.17	19.2	534.4	65.37	29.7	212.2	3.20	18.1	551.7	64.62	27.3	230.9	3.47	18.5
Fifth	Junietta Peerless	487.0	66.25	33.1	174.8	2.78	13.5	488.9	60.75	27.8	193.3	2.73	13.3	486.1	57.62	25.0	209.4	2.91	14.1
Tenth	Gilderbloom	315.5	62.25	30.8	166.0	5.60	17.7	301.0	59.94	27.4	199.9	4.91	14.8	255.5	59.37	25.5	215.9	4.97	12.7
Fifteenth	Countess Flavia	406.2	65.69	33.0	174.9	5.87	23.8	408.1	60.81	27.8	198.3	5.89	24.0	377.9	59.19	25.4	215.3	6.32	23.9
Eleventh	Barbara Allen	468.3	70.44	34.9	190.2	4.89	22.9	471.7	65.69	29.7	217.9	5.15	24.3	444.0	64.37	27.2	229.9	5.52	24.5
Tenth	Maggie 6th	407.6	59.94	29.6	162.0	3.87	15.8	416.9	56.37	25.5	183.9	3.31	13.8	391.8	55.44	23.4	198.0	3.45	13.5
Eighth	Rosette Ford	476.1	70.25	34.8	189.9	4.76	22.7	463.7	65.69	29.8	214.2	4.74	22.0	452.0	64.37	27.1	229.8	4.98	22.5
Seventh	Orlote	558.2	70.00	34.7	188.5	4.85	27.1	577.9	65.69	29.7	214.2	4.95	23.6	560.6	64.44	27.2	229.9	5.22	29.3
Fourth	Ione	471.3	64.81	32.3	171.9	3.90	18.4	460.4	63.00	27.9	198.7	3.93	18.1	392.4	59.12	25.4	214.2	4.54	17.8
Second	Genevieve's Gift	403.7	45.62	24.2	111.9	3.38	13.7	383.1	45.37	22.1	153.1	4.00	15.3	326.3	45.50	20.2	170.6	4.69	15.3
	Average	507.8	68.45	34.2	182.5	4.09	20.2	506.0	64.11	29.1	208.0	4.06	20.1	467.5	62.26	26.4	223.7	4.34	19.6

RELATION OF MILK YIELD AND COMPOSITION TO CERTAIN FOOD CONSTITUENTS.

June was month of lactation.	NAME OF ANIMAL.	SEPTEMBER.						OCTOBER.					
		Milk yield, pounds.	Albuminoids in food, pounds.	Fat in food, pounds.	Sugar and starch in food, pounds.	Fat in milk, per cent.	Fat in milk, pounds.	Milk yield, pounds.	Albuminoids in food, pounds.	Fat in food, pounds.	Sugar and starch in food, pounds.	Fat in milk, per cent.	Fat in milk, pounds.
Twelfth.....	Esel 2d	612.9	102.00	29.1	213.6	3.87	23.7	617.2	89.81	28.2	287.4	3.30	20.4
Twelfth.....	Queen Duchess	363.3	88.81	25.1	180.9	3.95	14.4	122.4	56.50	15.7	150.1	5.30	6.5
Seventh.....	Manton Belle.....	464.7	89.50	25.3	182.6	3.75	17.4	385.0	75.56	23.7	235.5	3.83	14.7
Fourth	Miss Flow 6th	449.5	83.12	23.6	170.8	3.90	17.6	431.5	.....	22.0	.....	3.76	17.1
Fifth	Junietta Peerless.....	427.1	74.06	21.0	152.0	3.12	13.3	435.8	63.06	19.9	201.6	3.09	13.5
Tenth.....	Gilderbloom.....	204.5	71.44	20.3	145.9	5.41	11.0	182.2	53.25	18.5	192.0	6.22	11.3
Fifteenth	Countess Flavia.....	261.9	66.12	18.6	132.4	8.07	21.1	87.0	46.69	18.5	80.2	6.30	5.5
Eleventh	Barbara Allen.....	337.1	81.25	23.1	167.9	5.58	18.8	367.4	69.00	21.9	224.3	5.41	19.9
Tenth.....	Maggie 6th	318.2	69.25	19.7	142.6	3.78	12.0	320.1	59.44	18.8	193.8	3.71	11.9
Eighth.....	Rosette Ford	380.4	81.81	23.2	168.7	5.71	21.7	386.9	70.12	22.2	228.0	5.93	22.9
Seventh.....	Orlolo	475.3	81.50	23.2	169.1	5.30	25.2	521.8	72.50	22.9	236.0	5.65	29.5
Fourth.....	Ione	323.5	77.31	21.7	154.5	4.67	15.1	346.0	65.31	20.9	212.7	4.45	15.4
Second.....	Genevie's Gift.....	265.2	59.87	16.6	116.2	4.95	13.1	277.9	49.81	16.0	161.7	5.09	14.1
	Average	375.7	78.93	22.3	161.3	4.77	17.3	344.8	64.67	20.7	200.3	4.77	15.6

With a view to the further elucidation of this question, the following table presents the results obtained from each of the animals under investigation during the entire period of lactation of most of them, and the relation between certain constituents of their food and certain of the milk constituents.

It will be seen that the amount of albuminoids present in the food was 264 per cent greater than the caseine of the milk, a result which closely agrees with previous results secured at the Station, since, as the average of these results, we find that 27.5 per cent of the albuminoids of the food were utilized in milk production, while, in a previous experiment with five cows, it was found that the caseine of the milk produced by them was equal to 26.5 per cent of the albuminoids present in the food consumed by them.

It will be seen that the excess of albuminoids consumed over and above the caseine found in the milk was almost exactly double (198 per cent) the amount of the fat produced in the milk; also that the crude fat (ether extract) present in the food was 17 per cent greater than the fat present in the milk.

It is obviously of very great practical importance to determine if possible the source of the fat present in the milk, and the data already presented is valuable as throwing some light upon this as yet unsettled problem.

Dr. Foster, the eminent physiologist of Cambridge, England, in the latest edition of his *Physiology*, says, on page 785, that "the quantity of fat present in milk is largely and directly increased by proteid, but not increased, on the contrary diminished, by fatty food"; and upon page 773 he quotes approvingly that "Liebig showed that the butter (fat?) present in the milk of a cow was much greater than could be accounted for by the scanty fat present in the grass or other fodder she consumed."

Now we have shown in the table, page 115, that the average of thirteen cows gave a consumption of 62.3 pounds of albuminoids and of 26.4 pounds of crude fat, with a production in the milk of 19.6 pounds of fat, during the month of August; while in September they consumed upon an average 78.9 pounds of albuminoids and 22.3 pounds of crude fat, with a production of but 17.3 pounds of milk fat; or an increase of 15.5 per cent in the fats consumed

resulted in a decreased production of milk fat amounting to 11.7 per cent—results diametrically opposed at every point to the statement of Dr. Foster above quoted. And again, in July, the albuminoids fed were somewhat less than in June (6.3 per cent), while the amount of fat in the food was 14.9 per cent less in July than in June; but, as will be seen, the decrease of albuminoids did not decrease the production of fat in the milk, nor did the decrease of fat in the food increase the fat in the milk, since in July it was within .5 per cent of what it was in June.

The following table presents in another form certain of the results given in the preceding table :

RELATION OF MILK YIELD AND COMPOSITION TO CERTAIN FOOD CONSTITUENTS.

Months in lactation.	NAME OF ANIMAL.	Pounds of milk yield.	Pounds of fat in milk.	Pounds of caseine in milk.	Pounds crude fat in food.	Pounds albuminoids in food.	Pounds crude fat in food to one lb. milk.	Pounds albuminoids in food to one lb. milk.	Pounds crude fat in food to one lb. fat in milk.	Pounds albuminoids in food to one lb. fat in milk.
Eighteen	Esel 2d	11,918	424.5	380.4	538.9	1,268.0	.045	.106	1.27	2.99
Twelve	Miss Flow 5th	5,251	200.5	189.6	272.4	729.7	.052	.139	1.36	3.64
Seventeen	Queen Duchess	9,489	425.3	324.6	423.3	943.9	.045	.099	.99	2.22
Thirteen	Manton Belle	6,796	230.4	212.8	332.9	724.8	.049	.107	1.44	3.14
Eleven	Junietta Peerless	4,792	139.9	138.6	243.5	547.0	.051	.114	1.74	3.91
Sixteen	Gilderbloom	5,118	285.7	187.9	360.0	809.9	.070	.158	1.26	2.83
Nineteen	Countess Flavia	8,024	477.1	331.5	473.8	1,171.8	.059	.146	.99	2.46
Seventeen	Barbara Allen	6,950	476.4	243.3	402.9	911.6	.068	.131	.85	1.91
Sixteen	Maggie 6th	6,182	220.2	197.7	338.9	763.0	.055	.123	1.10	3.47
Thirteen	Nellie 6th	4,095	142.8	133.3	201.3	623.0	.049	.152	1.41	4.36
Fourteen	Rosette Ford	6,110	307.8	207.6	338.6	767.3	.055	.126	1.10	2.49
Thirteen	Oriole	6,627	335.9	212.7	317.2	706.4	.048	.107	.94	2.10
Ten	Ione	3,541	162.6	129.2	225.8	514.3	.064	.145	1.39	3.16
Eight	Genevieve's Gift	2,191	108.2	74.1	136.9	302.7	.064	.138	1.26	2.80
Average	Average	6,220	281.3	211.7	329.0	770.2	.053	.124	1.17	2.74

REGULARITY OF MILK SECRETION.

In the ninth annual report it was shown for the cow Flora that the average for fifteen days showed that during the night there was an hourly secretion of 11.238 ounces, and during the day of 11.246 ounces of milk, proving conclusively that for this particular cow there was a uniform rate of milk secretion during night and day, and that this uniformity was not disturbed by frequent and decided changes in the times of milking. On the other hand with the cow Ann during a period of fifty-eight days, the amount of milk secreted per hour during the night was to that secreted per hour during the day, as 100 to 98.8, and it is interesting to compare these results already recorded with the cow Flora, since it shows the danger of drawing conclusions from results secured from the individual, however carefully ascertained.

During four days several cows, consisting of two Holsteins, three Jerseys, two Ayrshires, one Guernsey and one American Holderness, were milked regularly at intervals of twelve hours each, or as near that as was practicable, the exact time in each case being recorded. There were slight differences in the yield per hour, but not uniform for either animal, and the average results from these nine cows, of five different breeds, showed that the amount, by weight, of milk secreted from 5 P. M. to 5 A. M. was the same as that secreted from 5 A. M. to 5 P. M. during these four days of trial, as will be seen by the following table giving the average results for each day :

AVERAGE POUNDS MILK PER HOUR.

	Nov. 22.	Nov. 23.	Nov. 24.	Nov. 25.	Average.
During night.....	.674	.690	.720	.701	.696
During day .....	.691	.710	.705	.693	.700

This is a difference of only six-tenths of one per cent more during the day.

The following table presents the average yield and composition of the morning's and evening's milk of each one of fifteen cows of six different breeds, and the general average of all. There were

made in all 465 analyses each of morning's and evening's milk, so that these results may be regarded as conclusive; but it is quite possible and even probable that far different results might follow with animals which, from one cause or another, were subjected to other conditions which might tend to disturb the exercise of so important a function as the secretion of milk, which, as has been shown, appears normally to proceed with surprising regularity.

The yield of milk showed a slight excess in the evening's milk over the morning's, or as 100 to 100.6, and this is so slight that an average difference of two and one-fifth minutes in the time of milking might have caused it, but that the evening's milk also contained a little more water than the morning's milk. The rations of the several solid constituents being as follows:

	Morning's milk.	Evening's milk.
Total solids	100	98.98
Fat.....	100	99.06
Caseine.	100	98.34
Sugar	100	99.42
Ash	100	97.56

NAME OF ANIMAL.	Number of analyses.	MORNING.								EVENING.									
		Total solids.	Solids fat.	Water.	Fat.	Caseline.	Sugar.	Ash.	Nitrogen.	Milk yield, pounds.	Total solids.	Solids fat.	Water.	Fat.	Caseline.	Sugar.	Ash.	Nitrogen.	Milk yield, pounds.
Tolsma Artis	28	11.78	8.52	88.25	3.27	3.37	4.49	0.72	0.51	11.1	11.96	8.66	88.06	3.30	3.28	4.62	0.74	0.52	10.5
Esol 2d	38	13.05	9.37	86.95	3.68	3.54	5.11	0.75	0.56	12.0	12.78	9.73	87.21	3.58	3.36	5.13	0.73	0.53	11.7
Miss Flow 5th	41	14.02	9.69	85.98	4.33	3.74	5.22	0.73	0.59	8.2	13.84	9.51	86.16	4.30	3.70	5.11	0.71	0.59	7.8
Queen Duchess	34	13.55	9.76	86.45	3.78	3.52	5.48	0.75	0.56	10.6	13.42	9.06	86.61	3.30	3.42	5.79	0.69	0.54	12.6
Manton Belle	28	12.58	9.05	87.42	3.53	3.31	5.07	0.67	0.52	9.7	12.49	9.06	87.51	3.43	3.11	5.31	0.63	0.49	9.7
Junietta Peerless	23	12.41	9.42	87.59	2.98	3.32	5.40	0.70	0.53	7.5	12.15	9.27	87.85	2.88	3.28	5.29	0.70	0.52	7.5
Gilderbloom	35	15.29	9.78	84.71	5.56	3.88	5.10	0.75	0.61	6.0	15.19	9.56	84.81	5.63	3.79	5.03	0.74	0.60	6.0
Countess Flavia	49	15.99	10.25	84.01	5.74	4.12	5.36	0.77	0.65	7.9	16.08	10.04	83.92	6.05	4.15	5.13	0.76	0.66	7.8
Barbara Allen	35	14.93	9.72	85.07	5.22	3.79	5.20	0.72	0.60	7.3	14.90	9.47	85.10	5.43	3.71	5.08	0.72	0.59	7.5
Maggie 6th	34	12.75	9.07	87.25	3.68	3.40	4.98	0.72	0.54	7.2	12.42	8.90	87.58	3.52	3.30	4.94	0.67	0.52	7.3
Nellie 6th	28	12.68	9.19	87.32	3.49	3.41	5.07	0.71	0.54	6.2	12.66	9.14	87.34	3.52	3.44	5.05	0.69	0.54	6.1
Rosette Ford	28	14.90	9.70	85.10	5.21	3.69	5.25	0.74	0.58	7.5	14.59	9.47	85.41	5.08	3.67	5.10	0.74	0.58	7.8
Orlolo	28	14.62	9.40	85.31	5.22	3.55	5.07	0.78	0.56	8.4	14.28	9.30	85.72	4.98	3.52	5.02	0.75	0.56	8.3
Ione	20	14.09	9.83	86.00	4.23	3.90	5.12	0.80	0.62	6.9	13.82	9.63	86.18	4.19	3.88	4.94	0.76	0.61	6.7
Genevie's Gift	16	13.59	9.56	86.41	4.02	3.65	5.18	0.73	0.58	5.9	13.56	9.39	86.44	4.17	3.60	5.04	0.75	0.57	5.8
Average	465	13.75	9.49	86.25	4.26	3.61	5.14	0.737	0.570	8.16	13.61	9.35	86.39	4.22	3.55	5.11	0.719	0.561	8.21

THE SOURCE OF FAT IN MILK.

We have already referred to the statement of Liebig that it was manifestly impossible that the scanty amount of fat in grass and fodder could account for the fat present in the milk of the cow, but as to the statement it would be far more readily accepted if the figures were given which prove it. It may be seriously questioned whether any cow fed entirely upon grass or any other green fodder will for months continue to produce more fat in her milk than careful analysis will show to be present in such grass or fodder.

With a view to determine, if possible, this important question interesting to the physiologist and of great practical value to the dairymen the following table has been compiled from the data, secured in the investigations of our cattle, which gives for each month of lactation for each animal the number of pounds of crude fat consumed in the food and the number of pounds of fat produced in the milk, and a study of the table will show results of much interest as bearing upon this question.

The aggregate number of pounds of crude fat and of milk fat is given under each column, and under the aggregates of the crude fat are given the several percentages which these pounds of crude fats represent as compared with the pounds of milk fats.

The aggregate number of pounds of crude fat consumed by these animals was 4,587.9 and the aggregate amount of milk fat produced by them was 3,793.4 pounds; or as 121 to 100. If we allow upon an average 17.4 per cent of the crude fat as impurity, it would still leave fat enough in the food to account for all recovered in the milk.

Upon the right hand of the table are given the averages of each animal for each month of lactation, and it is interesting to observe that during the earlier months the production of fat in milk is considerably in excess of even the crude fat of the food, but very soon the amount of crude fat eaten, and the amount produced became equal, and by a rather steady increase relatively the amount of crude fat consumed becomes at later months of lactation, largely in excess of the fat produced in the milk.

Such a result appears to be in accord with common observation, since, as is well known, the cow and other animals, as the time of giving birth to their offspring approaches, often becomes

dangerously laden with the accumulation of fat stored up in their bodies, and it is also a matter of common remark that soon after the period of lactation begins with the cow, this stored up fat, which seems like a provision of nature to enable her to meet such emergency, disappears, only to reappear again when a like emergency is to arise in the near future.

WHAT IS CRUDE FAT?

In the tables, as one of the constituents of the foods, crude fat is mentioned and its amount determined. By crude fat is meant in this report that portion of the food, whether hay or ensilage, grain or roots, which is dissolved out by ether; and it is well known that in all foods there are present besides the oils and fats several other compounds in greater or less quantities, according to the food under examination, which compounds resemble the fats and oils in being soluble in ether. The character of this ether extract, as the mixture of these several compounds soluble in ether is termed, has recently been studied by others, and is at present being investigated at this Station.

Dr. August Stellwaag has by the method of saponification studied the composition of the ether extract of several foods, and finds these extracts to contain of fats and fat acids the following per cents :

	Neutral fats.	Fat acids.	Total.
Hay.....	23.73	37.32	61.05
Rye bran.....	78.31	18.77	97.08
Wheat bran.....	78.73	15.82	94.55
Barley.....	72.99	16.99	89.98
Oats.....	61.60	29.58	91.18
Corn.....	88.71	6.67	95.38
Peas.....	58.57	30.50	89.07
Beans.....	57.70	24.80	82.50
Malt sprouts.....	24.60	32.65	57.25
Linseed cake.....	89.56	8.86	98.42
Palm-nut cake.....	83.79	13.39	97.18
Cotton-seed cake.....	81.14	6.30	78.44
Potatoes.....	16.33	59.07	75.40
Beets.....	23.04	35.34	58.38

In the American Chemical Journal for April 1890, H. J. Patterson, of the Maryland Agricultural Experiment Station, gives the results of his analyses when the ether extract was poured through a layer of animal charcoal, by which he obtained "in every case a product having the general appearance and characteristics of pure fat."

As compared with amount of ether extract, as obtained by the ordinary method, he obtained from several fodders and feeding material as follows:

PER CENT OF FATS IN ETHER EXTRACT.

Clover hay.....	57.55
Corn fodder.....	43.60
Corn meal.....	97.84
Cotton-seed meal.....	94.10
Sorghum fodder.....	49.45
Sorghum silage.....	59.84
Pea.....	51.16
Wheat bran.....	87.63

By adopting the above results of Dr. Stellwaag, we find that the ether extract or crude fat in the foods fed would be reduced from 4,588 pounds to 3,533 pounds, which amount is but 93.15 per per cent of the fat produced in the milk. There is, therefore, 6.85 per cent or 260 pounds unaccounted for.

H. P. Armsby gives as the per cent of fat in a well-fed ox as 8.7, in one half-fat 17.5 and in one fat 30.5. The cows under experiment at this Station had an average weight during the year of 816 pounds, or an aggregate of 11,424 pounds. They were all well fed and in good condition and would, at 8.7 per cent fat, have carried along an aggregate of 994 pounds of fat from which to supply any temporary demand over and above the supply in food, this would be a demand upon their stored up fat of less than two-thirds of an ounce per day during the fifteen months of lactation, or since this demand was mainly limited to the first three months of three and one-fourth ounces of fat per day, an amount so small as to be practically inappreciable.

It would appear therefore that whether or not the fat of the milk is wholly or in part obtained from the fat in the food, there

is little if any room for doubt that ordinarily the food contains enough of fat to equal that produced in the milk.

We hope during the next season to plan a series of experiments which may add to our present knowledge concerning this problem.

FRACTIONAL MILKING.

In the ordinary method of milking a cow twice daily, it has long been known that the last portion drawn from the udder is much richer in fat than the earlier portion, and for the purpose of determining the extent of this difference as to amount of fat and the relative number and size of milk globules, the first and last pints of the milk of Nellie 6th (American Holderness) were, on the twenty-ninth and thirty-first of December, taken for analysis, and this was upon January twenty-fifth and February second done with several of the other cows, the results of which examinations are given in the following table. The results with the entire milk product well mixed together are given for comparison.

The numbers representing the average size are the average sizes measured by divisions of the micrometer scale. The numbers representing relative size are obtained by dividing the per cent of fat by the number of globules in .0001 cubic millimeter.

The most striking fact is the per cent of fat in the first and last pints on December thirty-first, which differed nearly twenty-fold, or 1 to 19.6.

In both experiments the difference in the average size of the globules is to be remarked, as also the number of globules in .0001 cubic millimeter, the latter differing over four-fold.

The very great increase of globules of different sizes and especially in the larger globules of the first pints and the last pints is especially noticeable and important.

Finally, the first pint was in reality no better than ordinary skim-milk, containing, as did the sample taken December thirty-first, but one-third of one per cent of fat, while the normal milk contained 2.55 per cent.

Upon the table following are given the results of the microscopic and chemical examination of five samples of milk from five

different cows of three different breeds and in this case the milk was taken in halves.

It will be seen that there was a close resemblance in the results. In every case the first half contained only one-third to one-half the fat present in the last half. The average for the five giving 4.21 per cent of fat in the normal milk; 2.52 per cent in the first half and 5.89 per cent in the last half, or as 100 to 60 to 140. The same increase in the number of large globules is seen in the samples representing the last halves of each milking.

	DECEMBER 29.		DECEMBER 31.		
	First pint, Nellie.	Last pint, Nellie.	Mixed, Nellie.	First pint, Nellie.	Last pint, Nellie.
Average diameter, inches	16660	11393	13357	17409	11327
Number less than 1 division	12	25	28	14	35
Number between 1 and 2 divisions	14	80	52	10	88
Number between 2 and 3 divisions	2	27	11	3	27
Number between 3 and 4 divisions	0	5	5	0	10
Number between 4 and 5 divisions	0	2	0	0	3
Average size .....	.93	1.36	1.16	.89	1.38
Number in .0001 c. m. m.....	51	235	105	45	208
Relative size .....	....	....	243	78	329
Per cent of fat in milk .....	....	....	2.55	.35	6.85

JANUARY 25, 1892.										FEBRUARY 2, 1892.					
	Nellie, mixed.	Nellie, first half.	Nellie, second half.	Oriole, mixed.	Oriole, first half.	Oriole, second half.	Artalia, mixed.	Artalia, first half.	Artalia, second half.	Manton Belle, mixed.	Manton Belle, first half.	Manton Belle, second half.	Miss Flow 5th, mixed.	Miss Flow 5th, first half.	Miss Flow 5th, second half.
Width of tube.....	31	32	30	26	32	25	31	28	23	27	29	31	27	26	28
Number globules counted.....	80	59	117	41	44	62	63	30	50	74	46	83	143	77	130
Average size.....	1.07	1.34	1.18	1.51	1.69	1.52	1.33	1.28	1.25	1.13	1.03	1.21	.84	.89	.92
Number less than 1.....	34	21	43	11	11	20	23	12	18	36	23	40	91	46	64
Number between 1-2.....	32	18	46	15	14	12	22	9	16	22	15	20	39	22	54
Number between 2-3.....	14	15	23	9	11	23	10	8	10	11	6	14	12	9	9
Number between 3-4.....	0	5	5	6	5	7	5	0	6	2	1	7	0	0	3
Number between 4-5.....	0	0	0	0	3	0	3	1	0	2	1	2	1	0	0
Number between 5-6.....	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Average size in inches.....	1-14480	1-11563	1-13130	1-10261	1-9168	1-10193	1-11650	1-12105	1-12395	1-13130	1-15043	1-12805	1-18445	1-17409	1-16341
Number in .0001 c. m.	153	106	239	111	79	183	117	70	174	187	100	159	361	210	305
Relative size	235	198	213	549	530	437	372	300	379	202	220	336	90	100	144
Fat in milk.....	3.6	2.10	5.10	6.10	4.20	8.00	4.35	2.10	6.60	3.77	2.20	5.35	3.25	2.10	4.40

In continuing this investigation the milk from several cows was taken in successive pints, each pint being drawn from the four teats in approximately equal quantities. By the aid of an assistant the operation of milking was not prolonged over two or three minutes, and was without any apparent annoyance to the cow.

The successive pints were analyzed, and after the samples were taken for analysis, the remainders were mixed thoroughly, from which a sample was also taken for analysis.

The results appear upon the following tables as also the average results of the five experiments.

The most striking points brought out in these experiments are as follows:

1. The steady increase in the number of fat globules in a definite volume of milk (.0001 c. m. m.); also in the average and relative size of these globules.
2. The increase, in the later pints of milk drawn, in the number of the larger globules, and as a result.
3. The steady increase in the percentage of fat in the successive portions of milk.

It is interesting to observe that in the first half of the milk of the average table, the average per cent of fat was 2.02, while the average for the last half the per cent of fat was more than double, 4.28 per cent; and in the case of Nellie, January twentieth the average per cent of fat in the first half of the milk was .76, and in the last half was 3.09, or almost exactly as 1 to 4; and with Countess Flavia, February ninth, giving a milk very rich in fat, it was found that the average of the first half was 3.55 per cent and of the last half 7.01 per cent, very nearly as 1 to 2.

The secretion of milk as we have already shown is a regular and continuous process, the amount of milk capable of being drawn from the udder being exactly proportional to the length of time allowed for its secretion, it would appear that the phenomena which are shown by the examination of these fractional milkings, was due merely to what by comparison we may term "warm setting" within the udder and other milk vessels of the animal.

JANUARY 20, 1892 — NELLIE 6TH — "PINT MILKINGS."

	First pint.	Second pint.	Third pint.	Fourth pint.	Fifth pint.	Sixth pint.	Seventh pint.	Eighth pint.	Ninth pint.	Tenth pint.	Eleventh pint.	Twelfth pint.	Thirteenth pint.	Mixed.
Width of tube.....	30	29	27	31	32	31	30	32	26	26	28	26	28	25
Number globules counted.....	40	31	17	34	40	47	54	70	82	75	75	74	84	50
Number globules in standard tube.....	89	74	47	71	78	98	120	137	243	222	191	219	214	160
Average size.....	.82	.61	.88	.91	.65	.87	1.00	1.06	1.10	1.00	1.20	1.16	1.11	.91
Number between 0-1.....	24	25	8	20	26	27	24	35	41	40	37	31	35	27
Number between 1-2.....	14	6	8	10	12	16	23	20	25	22	18	27	31	15
Number between 2-3.....	2	0	1	3	0	8	5	14	14	10	16	13	17	7
Number between 3-4.....	0	0	0	1	0	1	2	0	2	3	2	2	1	1
Number between 4-5.....	0	0	0	0	2	0	0	0	0	0	1	1	0	0
Number between 5-6.....	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Number between 6-7.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number between 7-8.....	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Average size in inches.....	1-18895	1-25400	1-17607	1-17026	1-28837	1-17809	1-15494	1-14617	1-14085	1-15494	1-12912	1-13357	1-13958	1-17026
Number in .0001 c. m. m.....	52	68	43	65	72	90	110	126	223	204	176	201	197	147
Relative size.....	36	44	93	108	97	133	154	174	114	147	190	194	251	129
Fat in milk.....	.3	.3	.4	.7	.7	1.2	1.7	2.2	2.55	3.0	3.35	3.9	4.95	1.9

FEBRUARY 9, 1892 — COUNTESS FLAVIA — "PINT MILKINGS."

	First pint.	Second pint.	Third pint.	Fourth pint.	Fifth pint.	Sixth pint.	Seventh pint.	Eighth pint.	Ninth pint.	Tenth pint.	Eleventh pint.	Mixed.
Width of tube.....	26	27	25	30	26	29	30	31	33	31	34	36
Number globules counted.....	15	33	29	41	50	40	53	41	58	58	92	64
Number globules in standard tube.....	44	90	93	91	148	95	118	85	106	121	159	99
Average size	1.63	1.46	1.60	1.77	1.81	1.80	1.57	1.95	1.86	1.96	1.93	2.17
Number less than 1.....	4	15	13	8	14	8	23	8	12	11	15	6
Number between 1-2.....	6	4	4	13	8	10	7	9	18	17	24	17
Number between 2-3.....	2	10	6	12	17	12	12	14	19	13	31	20
Number between 3-4.....	2	3	2	7	9	10	9	9	5	10	14	14
Number between 4-5.....	1	1	4	1	2	0	2	1	4	7	7	6
Number between 5-6.....	0	0	0	0	0	0	0	0	0	0	1	1
Average size in inches.....	1-9505	1-10612	1-9683	1-8763	1-8560	1-8608	1-9869	1-7945	1-8330	1-7905	1-8028	1-7140
Number in .0001 c. m. m.....	40	83	85	84	136	87	108	78	97	111	146	91
Relative size	387	367	388	476	323	575	565	833	722	725	644	659
Fat in milk	1.55	3.05	3.30	4.00	4.40	5.00	6.10	6.50	7.00	8.05	9.40	6.00

FEBRUARY 11, 1892 — QUEEN DUCHESS — "PINT MILKINGS."

	First pint.	Second pint.	Third pint.	Fourth pint.	Fifth pint.	Sixth pint.	Seventh pint.	Eighth pint.	Ninth pint.	Tenth pint.	Eleventh pint.	Mixed.
Width of tube.....	33	31	31	33	39	23	24	27	25	32	28	32
Number globules counted.....	38	52	65	84	81	48	48	49	64	89	58	60
Number globules in standard tube.....	70	108	135	154	106	181	166	134	205	174	148	122
Average size	1.26	0.92	1.35	1.23	1.02	1.01	1.20	1.15	1.28	1.29	1.38	1.15
Number less than 1.....	15	29	26	35	46	24	27	23	25	27	19	30
Number between 1-2.....	12	17	15	29	20	12	10	16	19	38	22	16
Number between 2-3.....	8	5	20	12	12	12	6	6	17	18	11	10
Number between 3-4.....	3	1	3	7	2	0	1	3	3	6	4	3
Number between 4-5.....	0	0	1	1	1	0	4	1	0	0	1	2
Number between 5-6.....	0	0	0	0	0	0	0	0	0	0	1	0
Average size in inches.....	1-12297	1-16841	1-11477	1-12697	1-15190	1-15340	1-12912	1-13473	1-12105	1-12011	1-11227	1-13482
Number in .0001 c. m. m.	64	99	124	142	97	166	154	123	189	160	136	112
Relative size	250	212	193	169	237	129	156	219	163	231	393	252
Fat in milk.....	1.6	2.1	2.4	2.4	2.3	2.15	2.4	2.7	2.9	3.7	5.85	2.76

FEBRUARY 18, 1892 — ARTALIA — "PINT MILKINGS."

	First pint.	Second pint.	Third pint.	Fourth pint.	Fifth pint.	Sixth pint.	Seventh pint.	Eighth pint.	Ninth pint.	Tenth pint.	Mixed.
Width of tube.....	24	26	24	26	28	24	26	25	24	25	24
Number globules counted.....	12	20	23	48	30	48	48	49	58	58	43
Number globules in standard tube.....	42	59	80	142	76	167	142	157	201	186	152
Average size.....	1.08	1.40	1.33	1.13	1.12	1.57	1.26	1.47	1.65	1.50	1.34
Number between 0-1	6	7	9	21	12	15	19	18	12	15	15
Number between 1-2	5	5	7	17	15	11	14	12	23	21	12
Number between 2-3	0	6	4	9	1	17	11	14	13	16	12
Number between 3-4	1	2	2	1	1	5	4	3	8	5	3
Number between 4-5	0	0	1	0	1	0	0	2	1	1	2
Number between 5-6	0	0	0	0	0	0	0	0	1	0	0
Average size in inches.....	1-14346	1-11067	1-11650	1-13711	1-13834	1-9869	1-12297	1-10540	1-9390	1-10329	1-10695
Number in .0001 c. m. m	39	54	73	131	70	154	131	144	185	171	140
Relative size.....	128	204	178	137	342	221	340	347	270	365	218
Fat in milk .....	.5	1.1	1.3	1.8	2.4	3.4	4.45	5.	5.	6.25	2.77

FEBRUARY 24, 1892 — NELLIE — "PINT MILKINGS."

	First pint.	Second pint.	Third pint.	Fourth pint.	Fifth pint.	Sixth pint.	Seventh pint.	Eighth pint.	Ninth pint.	Tenth pint.	Eleventh pint.	Twelfth pint.	Thirteenth pint.	Mixed.
Width of tube.....	48	50	48	48	36	28	32	31	33	31	33	26	27	27
Number globules counted.....	65	68	92	133	87	83	71	114	98	128	121	133	135	61
Number globules in standard tube.....	56	54	80	115	134	212	139	237	180	266	222	393	370	167
Average size.....	.85	1.0	1.08	1.16	.97	1.17	1.15	1.12	1.10	1.10	1.03	1.12	1.11	1.09
Number between 0-1.....	38	37	44	56	39	38	28	47	39	58	61	48	54	30
Number between 1-2.....	20	22	31	47	39	24	30	44	41	45	39	53	56	18
Number between 2-3.....	7	7	16	25	8	17	12	22	16	23	18	26	24	12
Number between 3-4.....	0	2	1	5	1	4	0	1	2	2	3	6	1	1
Number between 4-5.....	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Number between 5-6.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average size in inches.....	1-18228	1-15494	1-14346	1-13357	1-15973	1-13243	1-13473	1-13834	1-14085	1-14085	1-15043	1-13834	1-13958	1-14215
Number in .0001 c. m. m.....	51	50	74	106	123	195	128	218	166	245	204	361	340	154
Relative size.....	59	120	135	113	110	77	133	105	169	135	211	130	162	175
Fat in milk.....	3	.6	1.0	1.2	1.35	1.5	1.7	2.3	2.8	3.3	4.3	4.7	5.5	2.7
Solids not fat.....	9.41	9.36	9.33	.....	.....	.....	.....	.....	.....	.....	9.80	9.94	10.47	.....
Ash.....	3.796	.742	.821	.....	.....	.....	.....	.....	.....	.....	.743	.679	.624	.....
Fat in milk.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Feb. 24 Fat in milk.....	2.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Feb. 25 Fat in milk.....	2.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

AVERAGE RESULTS OF FRACTIONAL MILKINGS — PINTS.

	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.	Thirteenth.	Whole milk.
Number globules under first division...	47	55	43	38	43	41	45	41	35	35	34	37	42	36
Number globules between 1 and 2	35	25	26	35	29	27	28	28	33	35	29	44	38	28
Number globules between 2 and 3	12	15	22	18	14	24	17	22	23	20	24	15	19	23
Number globules between 3 and 4	5	4	5	8	6	8	7	6	6	8	8	3	1	9
Number globules between 4 and 5	1	1	4	1	3	0	3	2	2	3	3	1	0	4
Number globules between 5 and 6	0	0	0	0	0	0	0	1	1	0	2	0	0	1
Number globules in .0001 c. m. m.	55	71	80	106	100	138	126	138	172	178	166	281	269	129
Average size globules	1.03	1.07	1.25	1.24	1.11	1.28	1.24	1.35	1.40	1.37	1.11	1.14	1.11	1.14
Relative size globules	172	189	197	201	222	226	270	336	286	321	360	167	205	251
Per cent fat in milk .....	.85	1.43	1.68	2.02	2.23	2.65	3.27	3.74	4.05	4.86	4.48	4.30	5.23	3.21

Upon February twenty-fourth the experiment with Nellie gave, as the average of the first three pints of milk, 9.37 per cent of solids not fat, and .786 per cent of ash, facts which prove that the difference in the successive portions of milk drawn were almost wholly in the relative amount of fat they contained.

COMPOSITION OF MILK.

The following table gives the average daily milk yield and the composition of the milk of the several breeds under investigation, and the percentage composition of the total solids of the milk. It will be seen that this table gives the average results from an aggregate of 930 analyses.

It will be seen that while the average per cent of caseine in the milk of the different breeds varies from 3.39 to 3.91 or 15.3 per cent, the per cent of fat varies from 3.46 to 5.61 or 62.1 per cent, while the sugar varies from 4.84 to 5.33 or 10.1 per cent, and the ash from .698 to .760 or 8.9 per cent.

According, therefore, to the above table the ash varies least among the above constituents of milk, sugar next, then caseine, and fat, by far, in excess of all, varying over four times as much as caseine. This fact would clearly demonstrate that the per cent of fat present is the most reliable test by which to determine the relative value of normal milk not only for butter production but also for the manufacture of cheese.

If, however, we consider the percentage composition of the total solids in the milk we find the variation to be somewhat different, since, as will be seen, the caseine varies from 24.7 to 27.4 or 10.9 per cent, the sugar from 33.4 to 40.8 or 22.2 per cent, the ash from 4.82 to 5.92 or 23 per cent, and fat from 27.3 to 36.4 or 33.3 per cent, or very appreciably more than either of the other constituents of the total solids.

It is to be remembered that these results may differ as the animals become more mature, and can only be urged as true for the first period of lactation; but the results thus far secured conclusively establish the fact that despite the great differences which we find in the individuals even of the same breed, there are marked differences which characterize the milk from the different breeds.

Every step of the investigation thus far emphasizes the importance of intelligent choice by the dairyman of the breed best suited to [his purpose, and equally the importance of carefully testing and selection for the purpose of securing individuals which will, with greatest economy, furnish him the dairy product he desires, whether intended for the city, the creamery or the cheese factory.

AVERAGE COMPOSITION OF MILK.

BREEDS.	Number of analyses.	Water.	Total solids.	Solids not fat.	Fat.	Caseine.	Sugar.	Ash.	Nitrogen.	Daily milk yield.
Holstein-Friesian.....	132	87.62	12.39	9.07	3.46	3.39	4.84	.735	.540	22.65
Ayrshire	252	86.95	13.06	9.35	3.57	3.43	5.33	.698	.543	18.40
Jersey	238	84.60	15.40	9.80	5.61	3.91	5.15	.743	.618	14.07
American Holderness	124	87.37	12.63	9.08	3.55	3.39	5.01	.698	.535	13.40
Guernsey.....	112	85.39	14.60	9.47	5.12	3.61	5.11	.753	.570	16.00
Devon	72	86.26	13.77	9.60	4.15	3.76	5.07	.760	.595	12.65
Average .....	....	86.37	13.64	9.40	4.24	3.58	5.09	.731	.534	16.20

AVERAGE COMPOSITION OF TOTAL SOLIDS — PER CENT.

BREEDS.	Total solids.	Solids not fat.	Fat.	Caseine.	Sugar.	Ash.
Holstein-Friesian	100	73.2	28.0	27.4	39.1	5.93
Ayrshire	100	71.6	27.3	26.3	40.8	5.34
Jersey	100	63.6	36.4	25.4	33.4	4.82
American Holderness	100	71.9	28.1	26.8	39.7	5.53
Guernsey	100	64.9	35.1	24.7	35.0	5.16
Devon	100	69.7	30.1	27.3	36.8	5.52
Average.....	100	69.2	30.8	26.3	37.5	5.38

MICROSCOPIC EXAMINATION OF MILK.

The first two tables following present the average number of milk globules actually counted and their relative sizes during each month of lactation for each breed; and the tables next following present these results per thousand globules for greater ease of comparison; and another table gives the general average of these results for all the breeds.

It will be observed that, as the period of lactation advances, the relative number of the smaller globules increases with considerable regularity, and especially is this the case up to the twelfth month of lactation, after which the number of animals for comparison dropped off. In contrast it will be seen that the relative number of the larger globules, especially those from three to six divisions upon the micrometer scale in diameter, steadily diminish as lactation advances.

The average results giving the number of globules of different sizes present in 100 globules and extending during the entire period of lactation is highly interesting, as showing a close relation between certain of the breeds in the character of their products. These average results are here brought together for comparison.

AVERAGE SIZE AND NUMBER OF GLOBULES.

	0-1.	1-2.	2-3.	3-4.	4-5.	5-6.
Holstein-Friesian	145	546	245	51	11	2
Ayrshire	146	540	234	62	16	2
American Holderness.....	114	538	282	57	8	1
Devon	107	521	280	79	12	1
Jersey	81	383	321	181	53	11
Guernsey	65	389	350	144	44	7

A glance at the above shows a remarkable resemblance between the milk from the Holstein-Friesians and the Ayrshires upon the one hand, and between the Jerseys and Guernseys upon the other, while the American Holderness and Devons appear to occupy a midway position.

The large number of small globules and relatively small number of the larger globules of the Holstein-Friesians and Ayrshires,

as contrasted with the opposite character of the Jersey and Guernsey milks, is very remarkable.

The bearing of these facts upon the deportment of milk in the process of creaming is obvious, but the matter will be discussed further on. Another table gives the actual average diameter in fractions of an inch of the milk globules of each cow during each month of lactation, and it will be seen that while the average diameters of the globules of the milk of the different animals differ very widely, there is, in every case, a gradual diminution in the size of the globules during the successive months of lactation.

Another table gives the average number and sizes of the milk globules, the average number counted at each examination, the average size and diameter and the number of microscopic analyses made of the milk of each animal during the entire period of lactation.

It comprises the results of an actual count and measurement of 44,836 globules from the milk of fifteen cows of the six breeds under investigation. There were in all 454 examinations, with an average of ninety-nine globules measured and counted at each examination, and averaging thirty examinations for each cow. These details are given in order that the proper degree of confidence in the recorded results may be determined.

Still another table gives the average size of milk globules of each animal and for each breed during the entire period of lactation, and this table also shows the general grouping of the several breeds as is more plainly seen when we compare the number of globules of each size, as is shown upon page 151.

NUMBER AND SIZE OF MILK GLOBULES DURING LACTATION.

MONTH OF LAC- TATION.	HOLSTEIN-FRIESIAN.						AYRESHIRE.						AMERICAN HOLDERNESS.								
	Number of cows.	Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.	Number of cows.	Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.	Number of cows.	Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.
First.....	2	48.	85.	83.	41.	13.	9.	4	62.	273.	217.	91.	54.	4.	2	39.	256.	180.	55.	8.	1.
Second.....	2	46.	103.	80.	28.	5.	0.	4	112.	640.	396.	127.	22.	4.	2	13.	202.	154.	63.	19.	2.
Third.....	2	30.	125.	86.	21.	4.	1.	4	107.	517.	283.	59.	11.	0.	2	12.	230.	146.	21.	7.	1.
Fourth.....	2	79.	148.	118.	34.	10.	0.	4	171.	456.	249.	77.	13.	3.	2	1.	117.	73.	20.	1.	0.
Fifth.....	2	10.	171.	126.	26.	2.	0.	4	111.	310.	189.	53.	3.	1.	2	56.	417.	186.	46.	4.	0.
Sixth.....	2	7.	148.	87.	21.	3.	1.	4	103.	709.	321.	63.	17.	2.	2	50.	393.	191.	28.	4.	0.
Seventh.....	2	44.	646.	329.	47.	8.	1.	4	60.	419.	178.	43.	7.	0.	2	71.	430.	223.	34.	1.	0.
Eighth.....	2	164.	648.	180.	42.	5.	0.	4	87.	536.	222.	49.	9.	0.	2	35.	199.	112.	17.	0.	0.
Ninth.....	2	99.	332.	61.	11.	6.	0.	4	112.	533.	163.	36.	4.	2.	2	86.	423.	257.	38.	3.	0.
Tenth.....	1	27.	69.	27.	7.	4.	0.	3	113.	272.	121.	18.	4.	0.	2	69.	194.	74.	9.	1.	0.
Eleventh.....	1	26.	69.	30.	7.	1.	0.	3	138.	563.	168.	22.	1.	0.	2	27.	91.	86.	8.	1.	0.
Twelfth.....	1	34.	153.	60.	3.	0.	0.	2	105.	252.	76.	8.	2.	0.	2	26.	96.	52.	12.	1.	0.
Thirteenth.....	1	17.	67.	22.	2.	0.	0.	1	14.	75.	32.	13.	2.	0.	2	44.	167.	83.	18.	3.	0.
Fourteenth.....	1	35.	173.	72.	5.	1.	0.	1	35.	175.	69.	10.	3.	0.	2	85.	233.	90.	15.	3.	0.
Fifteenth.....	1	31.	183.	74.	9.	0.	0.	1	42.	134.	22.	7.	1.	0.	1	8.	15.	6.	0.	0.	0.
Sixteenth.....	1	60.	350.	75.	5.	0.	0.	1	18.	26.	11.	6.	3.	1.	1	8.	15.	6.	0.	0.	0.
Seventeenth.....	1	99.	184.	32.	5.	1.	1.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average.....	.....	133.	568.	240.	48.	9.2	1.5	.....	128.	543.	250.	63.	14.	1.7	.....	97.	542.	291.	60.	8.8	.6

NUMBER AND SIZE OF MILK GLOBULES DURING LACTATION.

MONTH OF LAC- TATION.	JERSEYS.						GUERNSEYS.						DEVONS.								
	Number of cows.	Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.	Number of cows.	Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.	Number of cows.	Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.
First.....	3	38.	106.	149.	111.	35.	11.	2	5.	59.	53.	30.	25.	7.	2	46.	377.	300.	128.	18.	3.
Second.....	3	24.	114.	153.	93.	40.	3.	2	13.	181.	191.	129.	51.	14.	2	29.	261.	190.	75.	8.	0.
Third.....	3	11.	46.	59.	40.	29.	13.	2	11.	182.	207.	109.	37.	1.	2	27.	148.	96.	22.	5.	0.
Fourth.....	3	53.	97.	95.	44.	14.	0.	2	24.	234.	185.	190.	12.	1.	2	11.	105.	91.	23.	5.	2.
Fifth.....	3	31.	205.	216.	78.	28.	6.	2	16.	97.	79.	36.	8.	3.	2	17.	149.	85.	21.	0.	0.
Sixth.....	3	31.	189.	168.	110.	46.	8.	2	15.	90.	89.	37.	11.	1.	2	38.	215.	90.	31.	0.	0.
Seventh.....	3	56.	312.	299.	136.	41.	6.	2	17.	218.	165.	48.	10.	3.	2	34.	281.	131.	22.	8.	0.
Eighth.....	3	32.	311.	394.	139.	26.	1.	2	11.	64.	73.	19.	3.	0.	1	25.	177.	57.	16.	0.	0.
Ninth.....	3	44.	228.	177.	84.	18.	3.	2	11.	74.	58.	19.	1.	0.	1	67.	121.	44.	6.	1.	0.
Tenth.....	3	29.	266.	203.	63.	18.	4.	2	16.	125.	127.	60.	6.	2.	1	9.	21.	8.	2.	1.	0.
Eleventh.....	3	34.	153.	105.	40.	14.	0.	2	36.	114.	83.	34.	14.	0.	.....	.....	.....	.....	.....	.....	.....
Twelfth.....	3	26.	151.	115.	52.	15.	4.	2	61.	193.	146.	54.	12.	0.	.....	.....	.....	.....	.....	.....	.....
Thirteenth.....	2	23.	168.	136.	53.	13.	3.	1	8.	33.	32.	6.	3.	0.	.....	.....	.....	.....	.....	.....	.....
Fourteenth.....	8	51.	279.	158.	51.	15.	1.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fifteenth.....	3	106.	255.	138.	57.	16.	5.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sixteenth.....	1	11.	31.	38.	21.	10.	1.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Seventeenth.....	1	25.	157.	44.	17.	1.	0.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average.....	.....	76.	386.	332.	149.	48.	9.	.....	58.	387.	346.	156.	45.	7.	.....	83.	508.	299.	95.	13.	1.4

NUMBER IN ONE THOUSAND.

MONTH OF LACTATION.	HOLSTEIN-FRIESIAN.						AYRSHIRE.						AMERICAN HOLDERNESS.								
	Number of cows.	Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.	Number of cows.	Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.	Number of cows.	Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.
First.....	2	174.	308.	301.	147.	47.	22.	4	88.	389.	310.	130.	77.	6.	2	72.	475.	334.	102.	15.	2.
Second.....	2	176.	393.	305.	107.	19.	0.	4	86.	492.	305.	97.	17.	3.	2	29.	446.	340.	139.	42.	4.
Third.....	2	112.	468.	322.	79.	15.	4.	4	110.	529.	290.	60.	11.	0.	2	29.	552.	350.	50.	17.	2.
Fourth.....	2	203.	383.	302.	87.	25.	0.	4	176.	471.	257.	79.	14.	3.	2	5.	552.	344.	94.	5.	0.
Fifth.....	2	30.	520.	383.	61.	6.	0.	4	166.	465.	283.	79.	5.	2.	2	79.	588.	262.	65.	6.	0.
Sixth.....	2	26.	554.	326.	79.	11.	4.	4	85.	583.	254.	52.	14.	2.	2	75.	590.	287.	42.	6.	0.
Seventh.....	2	41.	601.	306.	44.	7.	1.	4	85.	592.	252.	61.	10.	0.	2	93.	567.	294.	45.	1.	0.
Eighth.....	2	158.	624.	173.	40.	9.	0.	4	97.	596.	247.	54.	6.	0.	2	96.	548.	309.	47.	0.	0.
Ninth.....	2	196.	657.	121.	22.	4.	0.	4	132.	628.	192.	41.	5.	2.	2	107.	524.	318.	47.	4.	0.
Tenth.....	1	202.	515.	202.	52.	29.	0.	3	214.	515.	229.	34.	8.	0.	2	199.	559.	213.	26.	3.	0.
Eleventh.....	1	195.	518.	226.	53.	8.	0.	3	155.	631.	188.	25.	1.	0.	2	166.	559.	221.	48.	6.	0.
Twelfth.....	1	136.	612.	240.	12.	0.	0.	2	237.	569.	171.	18.	5.	0.	2	139.	513.	278.	64.	6.	0.
Thirteenth.....	1	158.	620.	204.	18.	0.	0.	1	103.	551.	235.	96.	15.	0.	2	140.	530.	284.	57.	9.	0.
Fourteenth.....	1	122.	605.	252.	17.	4.	0.	1	120.	603.	240.	34.	3.	0.	1	200.	547.	211.	35.	7.	0.
Fifteenth.....	1	104.	616.	249.	31.	0.	0.	1	201.	641.	105.	34.	14.	5.	1	276.	517.	207.	0.	0.	0.
Sixteenth.....	1	123.	714.	153.	10.	0.	0.	1	277.	400.	169.	92.	46.	16.	.....	.....	.....	.....	.....	.....	.....
Seventeenth.....	1	308.	571.	99.	16.	3.	3.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average .....	.....	145.	546.	245.	51.	11.	2.	.....	146.	540.	234.	62.	16.	2.	.....	114.	538.	282.	57.	8.	1.

NUMBER IN ONE THOUSAND.

MONTH OF LACTATION.	JERSEYS.						GUERNSEYS.						DEVONS.								
	Number of cows.	Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.	Number of cows.	Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.	Number of cows.	Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.
First.....	3	84	236	331	247	78	24	2	28	330	296	167	140	39	2	53	432	314	147	21	3
Second.....	3	56	267	358	218	94	7	2	22	313	300	223	88	24	2	52	464	337	133	14	0
Third.....	3	56	282	298	202	146	66	2	20	333	378	199	68	2	2	91	497	322	73	17	0
Fourth.....	3	175	320	314	145	46	00	2	44	428	339	165	22	2	2	46	443	384	97	21	9
Fifth.....	3	55	363	383	138	50	11	2	67	406	331	151	33	12	2	62	548	313	77	0	0
Sixth.....	3	318	318	208	87	15	15	2	62	371	366	152	45	4	2	101	572	240	82	5	0
Seventh.....	3	66	367	352	160	48	7	2	38	474	389	106	22	6	2	71	591	275	46	17	0
Eighth.....	3	35	345	436	154	29	1	2	101	438	343	112	6	0	1	91	644	207	58	0	0
Ninth.....	3	79	412	319	152	33	9	2	65	376	429	112	18	0	1	281	506	184	25	4	0
Tenth.....	3	50	456	348	108	31	7	2	48	372	378	178	18	6	1	220	512	135	49	24	0
Eleventh.....	3	98	442	304	116	40	0	2	128	406	295	121	50	0	.....	.....	.....	.....	.....	.....	.....
Twelfth.....	3	70	432	308	139	40	11	2	131	414	313	116	26	0	.....	.....	.....	.....	.....	.....	.....
Thirteenth.....	3	58	424	343	134	33	8	1	93	402	390	73	37	0	.....	.....	.....	.....	.....	.....	.....
Fourteenth.....	3	92	503	284	92	27	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fifteenth.....	3	184	442	239	99	28	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sixteenth.....	1	98	277	339	188	83	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Seventeenth.....	1	102	644	180	70	4	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average.....	.....	81	383	321	151	53	11	.....	65	389	350	144	44	7	.....	107	521	280	79	12	1

SIZE OF MILK GLOBULES DURING LACTATION.

ALL BREEDS.													
IN 1,000 GLOBULES.													
	Number of cows.	Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.	IN 1,000 GLOBULES.					
								Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.
First.....	15	239	1156	982	456	153	32	79	383	825	151	51	11.0
Second.....	15	236	1501	1164	515	145	23	66	419	325	144	40	6.4
Third.....	15	198	1248	867	272	93	16	74	463	322	101	34	6.9
Fourth.....	15	338	1157	811	288	55	6	127	436	305	108	21	2.3
Fifth.....	15	241	1349	881	254	45	10	87	485	317	91	16	3.6
Sixth.....	15	221	1744	946	290	83	12	67	529	287	88	25	3.6
Seventh.....	15	280	2306	1326	331	75	10	65	533	306	77	17	2.8
Eighth.....	14	360	1945	923	282	37	1	102	548	260	79	10	3.3
Ninth.....	14	419	1701	778	194	31	5	134	544	249	62	10	1.6
Tenth.....	12	263	947	560	159	31	6	134	481	244	81	17	3.0
Eleventh.....	11	261	991	422	111	31	0	144	546	232	61	17	0
Twelfth.....	10	242	851	449	129	30	4	142	499	263	76	18	2.3
Thirteenth.....	8	106	510	305	92	21	3	102	492	294	89	20	2.9
Fourteenth.....	6	206	860	379	81	20	1	133	556	245	62	13	7
Fifteenth.....	6	187	587	240	73	19	6	168	528	216	66	17	5.4
Sixteenth.....	3	89	407	124	32	13	2	133	610	186	48	20	3.0
Seventeenth.....	2	124	341	76	22	2	1	219	602	134	39	3.5	1.8
Average.....	.....	236	1153	661	211	52	8	116	509	268	83	20.6	3.3

AVERAGE NUMBER AND SIZE OF GLOBULES DURING ENTIRE PERIOD OF LACTATION.

	Less than one.	One to two.	Two to three.	Three to four.	Four to five.	Five to six.	Total number.	Average size.	Diameter in inches.	Number of counts.
Jersey	14	57	26	12	.....	.....	109	1.52	$\frac{10200}{109}$	31
{ Gilderbloom	17	35	29	9	6	.....	96	1.72	$\frac{3016}{96}$	40
{ Countess Flavia	7	48	15	9	5	2	86	1.73	$\frac{8966}{86}$	32
Holstein-Friesian	6	61	19	2	.....	.....	88	1.33	$\frac{11796}{88}$	36
{ Tolsma Artis	42	197	54	4	.....	.....	297	1.25	$\frac{12401}{297}$	36
{ Esel 2d	21	102	37	6	1	.....	167	1.38	$\frac{11366}{167}$	36
{ Miss Flow 5th	4	7	0	2	.....	.....	13	1.19	$\frac{13620}{13}$	35
Ayrshire	35	85	17	3	.....	.....	141	1.18	$\frac{13133}{141}$	28
{ Queen Duchess	18	97	23	1	1	.....	139	1.23	$\frac{12349}{139}$	26
{ Manton Belle	29	80	29	6	1	.....	145	1.31	$\frac{11918}{145}$	32
American Holderness	4	11	3	2	.....	.....	20	1.45	$\frac{10037}{20}$	25
{ Maggie 6th	14	87	62	20	9	.....	192	1.77	$\frac{8764}{192}$	30
{ Nellie 6th	9	44	21	7	2	.....	83	1.54	$\frac{10007}{83}$	31
Guernsey	10	82	19	9	.....	.....	120	1.41	$\frac{10933}{120}$	13
{ Rosette Ford	7	45	32	6	.....	.....	90	1.58	$\frac{9813}{90}$	19
{ Lone										
{ Genevie's Gift										
Devon										
Average per cent.	13.3	58.1	21.6	5.5	1.4	.1	.....	.....	.....	.....

AVERAGE SIZE OF MILK GLOBULES OF EACH ANIMAL DURING
ENTIRE PERIOD OF LACTATION, IN INCHES:

		Fraction of an inch.	
Guernsey	Oriole	$\frac{1}{8764}$	.....
Jersey	Barbara Allen	$\frac{1}{8966}$	.....
Jersey	Countess Flavia	$\frac{1}{9016}$	.....
Devon	Genevie's Gift	$\frac{1}{9813}$	.....
Guernsey	Rosette Ford	$\frac{1}{10007}$	.....
Jersey	Gilderbloom	$\frac{1}{10200}$	.....
American Holderness ..	Nellie 6th	$\frac{1}{10697}$	.....
Devon	Ione	$\frac{1}{10993}$	.....
Ayrshire	Miss Flow 5th	$\frac{1}{11266}$	.....
Holstein-Friesian	Tolsma Artis	$\frac{1}{11796}$	.....
American Holderness ..	Maggie 6th	$\frac{1}{11918}$	.....
Holstein-Friesian	Esel 2d	$\frac{1}{12401}$	.....
Ayrshire	Junietta Peerless	$\frac{1}{12548}$	.....
Ayrshire	Queen Duchess	$\frac{1}{13020}$	.....
Ayrshire	Manton Belle	$\frac{1}{13133}$	.....
AVERAGE BY BREED.			
Guernsey		$\frac{1}{9344}$	100
Jersey		$\frac{1}{9631}$	103
Devon		$\frac{1}{10370}$	111
American Holderness ...		$\frac{1}{11274}$	121
Holstein-Friesians		$\frac{1}{12090}$	128
Ayrshire		$\frac{1}{12446}$	133

PHYSICAL EFFECTS OF PERIOD OF LACTATION ON MILK.

In the following table is presented the average results for all the animals for each month of lactation, giving the average diameter of the globules in fractions of an inch, their average volume in fractions of a cubic inch, their ratio of volume, weight and buoyancy of the globules, the average weight of the globules in fractions of a grain, and their average buoyancy in grains.

The diminution in the average diameter of the globules and still more in their volume, weight and buoyancy, which vary as the cubes of the diameter is most striking.

MONTH OF LACTATION.	Number of cows.	Average diameter of globules, inches.	Average volume of globules, $\times 10^{-6}$, 000,000 cub. in.	Ratio of volume, weight and buoyancy.	Average weight of globules, grains, $\times 1,000,000,000,000$.	Average buoyancy, grains, $\times 1,000,000,000,000$.
1	8	7143	70	100	333	45
2	13	7843	92	76	250	34
3	14	7843	92	76	250	34
4	14	8333	110	63	208	28
5	15	8602	121	57	189	26
6	14	8696	126	54	185	25
7	15	9091	143	49	160	22
8	14	9195	148	47	155	21
9	13	9756	177	39	130	18
10	13	9524	165	42	139	19
11	12	9524	165	42	139	19
12	11	9302	154	45	149	20
13	7	9524	165	42	139	19
14	6	9524	165	42	139	19
15	6	9756	177	39	130	18
16	4	9524	165	42	139	19

The following table gives the average per cent of the total fat present in the globules of different sizes and for the several breeds, as also the general average for all.

For comparison we find the average per cent of globules of different sizes for all breeds and for the entire period of lactation to be as follows :

	Less than 1 division	1 to 2.	2 to 3.	3 to 4.	4 to 5.	5 to 6.
Per cent globules	11.6	50.9	26.8	8.3	2.1	.33=100
Per cent fat .....	.2	23.8	38.9	25.3	10.5	1.3=100

It will be observed that those globules which were less than one division of the micrometer scale, though 11.6 per cent of the total number contained only two-tenths of one per cent of the total fat; also that over sixty-two per cent of the total number of globules were less than two divisions in diameter but contained but twenty-four per cent of the total fat; also that while but less

than eleven per cent of the globules were over three divisions in diameter they contained over thirty-seven per cent of the fat.

If we examine the results with the several breeds we shall observe marked differences between them in this regard. For example we find that the Jerseys have about seventy per cent of their milk globules over three divisions in size, the Guernseys over fifty-five per cent, the Devons and American Holderness each thirty-five per cent, while the Ayrshires have twenty-four per cent and the Holstein-Friesians only 11.3 per cent over three divisions in size.

These characteristic differences are of prime importance in explaining the deportment of these milks in the operations of butter or cheese making.

It will be seen also that from the table given below that with the Jerseys the 62.5 per cent of the total fat in the milk is in 14.8 per cent of the total number of globules; with the Guernseys 55.4 per cent of the fat in 13.8 per cent of the globules; with the Devons 34.4 per cent of fat in 7.1 per cent of the globules; with the American Holderness 34.9 per cent of the fat in 5.8 per cent of the globules; with the Ayrshires 24.1 per cent of the fat in 3.0 per cent of the globules; and with the Holstein-Friesians 11.3 per cent of the total fat in the milk is found in 1.6 per cent of the total number of globules in the milk.

	Per cent of globules over 3 divisions in diameter.	Per cent of total butter in globules over 3 divisions in diameter.
Jerseys	14.8	62.5
Guernseys	13.8	55.4
Devons	7.1	34.4
American Holderness	5.8	34.9
Ayrshires	3.0	24.1
Holstein-Friesians	1.6	11.3

A glance at the above will show that the six breeds may readily be placed in three groups so far as the physical character of the milk produced goes.

PER CENT OF TOTAL FAT IN DIFFERENT SIZED GLOBULES.

	Less than 1.	1 to 2.	2 to 3.	3 to 4.	4 to 5.	5 to 6.
Jerseys .....	.1	11.3	26.1	30.7	23.9	7.9
Guernseys .....	.1	11.3	33.2	29.7	25.7	...
Devons .....	.1	23.0	42.5	34.4	....	....
American Holderness .....	.3	24.7	40.1	27.6	7.3	....
Ayrshires .....	.3	34.0	41.6	17.8	6.3	....
Holstein-Friesians . . . .	.3	38.3	50.1	11.3	...	....
Average .....	.2	23.8	38.9	25.3	10.5	1.3

THE ACTIVITY OF THE PHYSIOLOGICAL PROCESSES.

In the secretion of milk we have a ready and comparatively accurate means by which to measure the rapidity of physiological processes.

We have seen that several cows under experiment secreted night and day an average of seven-tenths of a pound of milk each hour, or nearly 19.6 cubic inches of milk. As an average of over 150 determinations with the milk of the fifteen animals of the six breeds, we learn that there were in one-ten-thousandth of a cubic millimeter of milk an average of 152 fat globules, and a little calculation will show that by each of these animals there were secreted each second an average of nearly 136,000,000 globules of fat.

Dr. Sturtevant, in the Trans. New York State Agricultural Society, 1872-6, page 98, mentions a specimen of *Bovista giganteus* (gigantic puff-ball) as growing in a single night, in damp weather, from the size of a mere point to that of an enormous gourd; and from an approximate calculation, it was found that in this plant not less than 20,000 new cells were formed every minute; and Kieser calculated that the tissue of some fungi augmented at the rate of 60,000 cells a minute. But wonderful as this activity of cell action in the vegetable world, it would appear almost sluggish by comparison with what we find true concerning the secretion of the fat globules in milk.

EFFECT OF SIZE OF GLOBULES UPON CREAMING.

In the creaming at the Station the milk is generally set in cans eighteen inches deep, and the skimming is done in the morning. This results, of course, in allowing one-half the milk to stand .

twenty-four hours, and the other half twelve hours before skimming.

As the result of fifty-six days' experiment, it was found that the milk which stood for twenty-four hours gave upon an average 18.93 per cent of its weight of cream, while the milk which stood twelve hours, gave upon an average 20.17 per cent of its weight in cream.

Now we have shown as the average of 465 analyses of morning's milk, and an equal number of samples of the evening's milk, that the average milk yield in the morning was 8.16 pounds, and in the evening 8.21 pounds; also that the average per cent of fat in the morning's milk was 4.26, and in the evening's milk it was 4.22 per cent.

It will be seen, therefore, by simple calculation, that the total fat of the morning's milk was to that in the evening's milk as 100 to 99.67, while the amount of cream from the morning's milk which had set twenty-four hours, was to that from the evening's milk which had set but twelve hours as 100 to 106.55.

This difference is obviously due to the fact that after the cream has practically risen, upon longer standing it shrinks in volume owing to the separation of a portion of the skim-milk from the lighter fats. It shows, however, the fallacy of estimates based alone on the number of spaces of cream which different samples of milk may furnish.

Upon an average it will be seen that the fat globules in the lower strata of milk must rise about one and one-third inches per hour, but owing to the minuteness of these globules, their apparently slow progress is indeed relatively very rapid, since it requires the smaller globules, represented as less in diameter than one division of the micrometer scale, to move each second over a space 200 times greater than the diameter of the globules.

Should we suppose a balloon twenty-five feet in diameter to rise with equal relative velocity, it would rise about one mile per second.

But the relative rapidity of the rise of the globules diminishes as their diameter increases, and the number of their diameters in distance through which the several sized globules measured, by

divisions of micrometer scale, would pass at one and one-third inches per hour, is as follows :

Divisions of micrometer .....	.5	1.	1.5	2.	2.5	3.	3.5	4.	4.5	5.	5.5	6.
Number of diameters	199.	100.	66.	50.	40.	33.	28.	25.	22.	20.	18.	17.

The actual diameters in fractions of an inch, represented by these several divisions of the micrometer scale, are as follows :

Divisions of micrometer scale.	Fractions of one inch.	Divisions of micrometer scale.	Fractions of one inch.
.5	.0000473	3.5	.0003311
1.0	.0000946	4.0	.0003784
1.5	.0001419	4.5	.0004257
2.0	.0001892	5.0	.0004730
2.5	.0002365	5.5	.0005203
3.0	.0002838	6.0	.0005676

Now, since the resistance which these globules meet with in rising increases with the square of their diameter, while their ascensional force or buoyancy increases as their volumes, or as the cubes of their diameters, we may readily conclude that the larger globules are those first to reach the surface, and that if any fail to do so, it must be the smaller globules which the microscope should show in the skim-milk.

By means of the separator the centrifugal force increases the difference between the weight of the milk globule and the milk serum in which it is suspended, and since this difference thus increased will depend upon the size of the globules, it follows that the skim-milk from the separator should also show that the smaller globules only were left behind in this operation; and such we find to be the facts whether the skim-milk is obtained by setting or by the centrifugal.

Upon December 29, 1891, the American Holderness cow Nellie 6th, one month in milk, gave milk which by the Cooley system of setting and by the Baby separator yielded skim-milk of the following composition as determined by microscopic examina-

tion] and the Babcock test of the fat. The composition of the whole milk is also given for comparison :

COW, NELIE 6TH, DECEMBER 29, 1891.	Less than one.	One to two.	Two to three.	Three to four.	Average size.	Average size in inches.	Number in .0001 c. m. m.	Per cent of fat.
Skim-milk, Cooley system..	18	12	2	...	84	$\frac{1}{18145}$	40	.1
Separator skim-milk, Baby separator.....	28	19	....	...	72	$\frac{1}{20964}$	72	.1
Normal milk.....	28	52	11	5	116	$\frac{1}{13357}$	105	2.55

The results are excellent by both methods, and, as is seen, not only were practically all the globules above two divisions of the micrometer scale in diameter removed in the cream, but also by far the larger proportion of those present whose diameter was above one division of the scale were also recovered in the cream, since the ratio in number of globules less than one division in the skim-milk was to the number of those between one and two divisions as 100 to 67, while the ratio in the normal milk was as 100 to 186, thus proving that even if some of the globules below one division were recovered in the cream — a most unwarrantable supposition — there were recovered nearly two-thirds (sixty-four per cent) of those globules between one and two divisions in diameter, and practically all of those larger.

It will also be observed that while there was upon an average half as many fat globules in the skim-milk as in an equal volume of normal milk, the skim-milk contained only four per cent as much total fat as was present in the full milk.

These results are entirely in accord with the facts set forth in the table giving the "Per Cent of Total Fats in the Different Sized Globules," where it was shown that the Holderness milk contained but .3 per cent of its fat in globules of less diameter than one division of micrometer scale, and 24.7 per cent in those globules from one to two divisions of the scale in diameter;

although from seventy-five to eighty per cent of all the globules present in the milk were below two micrometer scale divisions in diameter.

As illustration of the great differences in milk in the operation of creaming, depending upon this difference in the relative size of the fat globules, the following experiment is given with one sample of Jersey and another sample of Ayrshire milk.

These two samples were set in half liter cylinders, at a depth of eleven inches, at 6.45 A. M. and at intervals, without disturbance of the milk, small portions were taken from the bottom for the determination of fat with the following results :

JERSEY MILK.

	C. C.	Per cent of fat.
8.00 A. M., drew from bottom	18	2.9
10.00 A. M., drew from bottom	28	1.5
11.30 A. M., drew from bottom	26	1.1
1.00 P. M., drew from bottom	28	1.0
1.00 P. M., drew from middle	26	6.4

AYRSHIRE MILK.

	C. C.	Per cent of fat.
8.00 A. M., drew from bottom	18	3.0
10.00 A. M., drew from bottom	28	2.3
11.30 A. M., drew from bottom	28	2.2
1.00 P. M., drew from bottom	25	1.7
1.00 P. M., drew from middle	27	3.5

The contrast is quite marked, and it will be seen that the Ayrshire milk, although containing far less fat, was, after six and a quarter hours, setting much richer in fat in its lower portion than was the Jersey milk. It will be seen, also, that after a fifth of the milk had been withdrawn the portion taken from the middle of the remaining 400 c. c. was richer than the original milk in fat in both cases.

This simple experiment shows also the fallacy of any attempt at determining the value of any method of creaming which depends upon the analysis of a small portion of milk drawn from the bottom of the sample under experiment.

CHANGES IN MILK GLOBULES DURING LACTATION.

It is well known that the average size of the milk globules diminishes during the progress of lactation, also that the yield of milk decreases in volume, also that the number of milk globules in a given volume of milk increases as lactation advances.

It is an interesting question in its physiological bearings and of great practical value to determine whether the actual number of fat globules secreted by the cow increases during the months of lactation.

Our records show an aggregate of 489 actual counts of samples of milk from fifteen cows and extending through an average of fourteen months lactation and the number of globules actually present in a given volume (.0001 c. m. m.) was determined in each case.

We have also the daily yield of milk of these cows during the same period. By dividing the period of lactation of each cow into four equal periods, we find upon an average that the milk yield for these periods given in percentages was as follows:

First period 100; second period 95; third period 76.2; fourth period 70.6. In a similar way we find that the number of fat globules in a definite volume of milk varied as follows:

First period 100; second period 144; third period 195; fourth period 267.

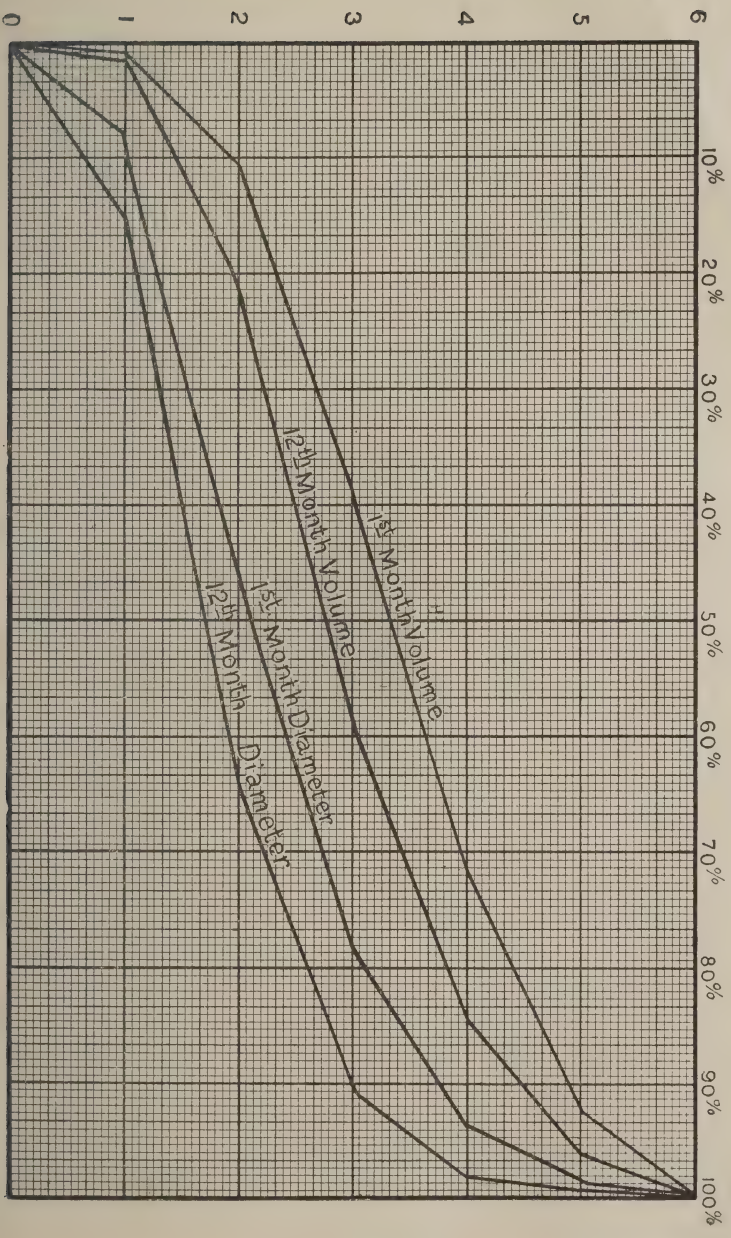
If now we combine these proportions we have the following as representing the actual number of globules of fat secreted, without regard to the milk yield, viz.: First period 100; second period 137; third period 149; fourth period 189.

It appears therefore that there is a rather steady increase in the number of fat globules secreted, and that upon an average there are eighty-nine per cent more present in the milk during the last than during the first quarter.

It would be interesting to know whether this increase is due to an increased development of the fat producing or secreting cells, a supposition not improbable in consideration of this being the first period of lactation with these animals; or may it be due to the breaking up of the larger fat globules, a very impropable supposition, although such breaking up would increase the number and decrease the size, both well known phenomena; or may it

Changes in Diameter and Volume of Milk Globules. During Lactation.

E



be caused by the cells becoming through long continued lactation unable to retain the larger globules which characterize the earlier secretions?

Certainly it would be desirable to discover some mode of treatment or method of feeding by which the size of these globules could be increased, thus increasing the yield of fat and facilitating many of the operations of the dairy.

The following table and diagram show the changes in diameter and volume of fat globules between the first and twelfth month of lactation.

The great increase in the percentage of globules of small diameter given is very marked, and an equally marked decrease in the percentage of the larger globules; and since the volumes vary as the cubes of the diameters, these differences are more strongly marked. It will be seen that during the first month 39.3 per cent of the fat was in globules less in diameter than three divisions of the micrometer scale and nearly sixty-one per cent in the larger globules, while in the twelfth month fifty-nine per cent of the fat was present in globules less than three divisions in diameter, while but forty-one per cent was present in the larger globules.

In the graphical chart the upper margin shows the percentages of volumes in the globules of different sizes as also the percentages of the globules of the different sizes given upon the left-hand margin. A glance shows that the change is a shifting in each case of the line representing diameters or volumes to the right-hand corner, or a general diminution of the diameter of the globules, and general increase in the volume of fat in the small globules. For example, during the first month of lactation there was about ten per cent of the fat in globules less than two micrometer scale divisions, while in the twelfth month there was over twenty per cent of the fat present in globules less than two divisions in diameter. So too in the first month there was less than eighty per cent of the globules under three divisions in diameter, while in the twelfth month there were ninety per cent under three divisions in diameter. It will also be seen how very small a percentage of the fat is present in the globules less than one division in diameter, although the number of globules is pretty large.

CHANGES IN DIAMETER AND VOLUME OF GLOBULES DURING LACTATION.

DIVISIONS ON MICRO. SCALE.	Diameter first month.	Diameter twelfth month.	Volume first month.	Volume twelfth month.
Less than one	7.9	14.2	.3	.7
One to two.....	38.3	49.8	10.1	20.9
Two to three.....	32.5	26.3	28.9	37.3
Three to four.....	15.1	7.6	31.7	25.5
Four to five	5.1	1.8	21.2	11.8
Five to six	1.1	.3	7.8	3.8

ANALYSIS OF FRUIT TREES.

An examination has been made of several varieties of nursery stock for the purpose of learning the quality and quantity of the mineral constituents removed by them from the soil.

The trees were contributed for the purpose by several of the leading nurserymen of Geneva from their stock, and were taken up early in the spring before the buds were well developed. The roots were as carefully cleaned of adhering earth as was possible, and after weighing, the trees were allowed to become air dry, when they were again weighed. Each tree was then divided into roots, trunk and branches, which were separately weighed, and after cutting up were placed in glass jars to await analysis. Each sample was burned at a low red heat, the ash weighed and preserved for analysis. It will be seen that the amount of ash in the roots and its composition in many cases seems to show that it was practically impossible to entirely remove from the roots the adhering earth.

The results thus far obtained are presented in the following tables:

WEIGHT OF ROOTS, BRANCHES AND TRUNKS OF NURSERY STOCK IN GRAMS.

Variety.	NAME.	Green tree.	Dry tree.	Water.	Dry roots.	Dry trunk.	Dry branches.	Roots, organic.	Roots, ash.	Trunk, organic.	Trunk, ash.	Branches, organic.	Branches, ash.	Total ash.
Apple.....	Hurlburt.....	1545.	844.7	700.3	355.3	393.2	89.7	339.9	15.43	331.8	11.36	85.4	4.32	31.11
Apple.....	Haas.....	713.	444.2	268.8	119.2	241.9	79.6	112.5	4.34	237.0	4.94	76.5	3.13	14.79
Apple.....	Golden Sweet.....	587.	339.2	247.8	122.9	145.7	69.1	118.6	4.32	142.4	3.33	67.0	2.10	9.77
Cherry.....	Yellow Spanish.....	1558.	854.8	703.2	357.0	339.5	153.3	344.9	12.08	332.7	6.75	146.2	7.14	25.97
Cherry.....	Napoleon Bigarreau.....	1143.	601.5	541.5	185.2	313.7	98.6	176.8	13.41	307.1	6.04	94.5	4.13	19.18
Cherry.....	Rockport Bigarreau.....	1786.	1104.0	682.0	335.3	504.5	257.2	321.7	18.61	496.9	7.57	91.0	7.61	28.79
Cherry.....	Windsor.....	2105.	1320.6	784.4	358.8	634.3	315.5	348.5	10.30	625.8	8.46	246.3	10.92	29.68
Peach.....	Honest John.....	247.	130.2	116.8	47.6	43.1	36.5	46.0	1.55	41.8	1.33	34.2	2.28	5.16
Peach.....	Red Roman.....	556.	314.6	271.4	129.0	111.9	73.7	125.5	3.52	133.2	2.28	69.4	4.25	10.05
Peach.....	Large Early York.....	347.	135.6	133.4	84.0	71.3	38.3	82.3	1.71	69.7	1.56	36.4	1.90	5.17
Peach.....	Heath Cling.....	608.	315.3	292.7	127.2	109.5	76.6	123.3	3.87	107.2	2.97	73.3	3.34	9.48
Peach.....	Stump.....	331.	180.3	150.7	61.2	71.6	45.0	59.5	1.71	69.8	1.82	42.6	2.42	5.95
Peach.....	Stevens Rareripe.....	464.	300.1	163.9	83.3	113.2	32.6	81.5	1.77	111.0	2.16	31.4	1.17	5.10
Peach.....	Solvay.....	394.	224.9	163.9	87.9	84.6	52.4	84.9	2.99	83.1	1.51	50.7	1.65	6.15
Peach.....	Early Rivers.....	307.	193.7	113.3	84.1	56.7	30.8	81.2	2.92	55.5	1.19	29.3	1.54	5.65
Grape vine.....	Mixed.....	337.	174.5	162.5	87.9	174.5	174.5	174.5	5.38	240.6	5.67	85.0	5.36	5.36
Crab apples.....	Hyslop.....	873.	492.3	380.7	157.2	246.3	87.8	151.8	7.85	236.1	10.53	73.6	3.39	13.80
Crab apples.....	Orange.....	895.	498.8	390.2	174.2	246.6	77.0	166.3	7.85	236.1	10.53	73.6	3.39	21.77
Pear.....	Vicar.....	1336.	513.3	822.7	192.0	205.9	111.4	186.3	6.71	197.6	8.33	104.5	6.91	20.95
Pear.....	Doyenne d'Ete.....	1923.	1027.6	894.4	392.1	434.7	195.8	377.3	14.79	418.0	16.69	185.9	9.85	41.33
Pear.....	Howell.....	1316.	778.7	894.4	255.6	375.9	137.2	242.3	13.27	365.4	10.50	131.7	5.47	29.24
Pear.....	Duchess de Bordeaux.....	1394.	642.1	751.9	209.0	309.1	119.0	202.0	6.98	299.9	9.24	111.5	7.54	23.76
Pear.....	Flemish Beauty.....	1925.	792.9	742.1	156.4	475.0	148.5	152.3	4.13	461.3	13.69	142.3	6.21	24.03
Pear.....	Russian Beauty.....	559.	288.9	310.1	110.7	106.1	28.1	105.9	4.84	101.1	4.99	27.0	1.07	10.90
Pear.....	Russian 508.....	425.	183.4	241.6	45.4	115.4	19.6	42.6	2.75	111.9	3.52	18.6	7.26	7.26
Pear.....	Refreshing Russian.....	530.	232.2	297.8	76.9	130.4	21.4	72.8	4.09	126.8	3.57	20.6	.77	8.43
Plum.....	Coe's Golden.....	348.	467.9	380.1	172.6	224.9	66.4	164.1	8.45	219.0	5.82	64.1	2.28	16.65
Plum.....	Gueli.....	1165.	652.2	512.8	199.4	226.7	121.5	190.9	8.45	253.1	4.25	212.4	3.79	21.85
Plum.....	Smith's Orleans.....	1139.	590.1	548.9	193.1	259.6	134.4	184.1	9.03	262.4	6.46	130.6	3.79	19.28
Plum.....	Peter's Yellow Gage.....	1194.	689.4	504.6	176.4	237.0	183.0	170.8	5.58	231.4	5.57	176.7	6.33	17.48
Quince.....	Missouri Mammoth.....	324.	164.3	159.7	62.4	64.5	34.4	58.9	3.48	61.9	2.59	32.5	1.92	7.99
Quince.....	Orange.....	1053.	533.1	469.9	285.2	175.6	125.8	270.4	14.77	168.8	6.76	130.4	5.39	26.92

PER CENT OF DRY MATTER AND ASH IN NURSERY STOCK.

Variety.	NAME.	Per cent of dry matter in roots.	Per cent of dry matter in trunk.	Per cent of dry matter in branches.	Per cent of ash in dry roots.	Per cent of ash in dry trunk.	Per cent of ash in dry branches.	Per cent of ash in green tree.	Per cent of ash in dry tree.	Weight ash in roots.	Weight ash in trunks.	Weight ash in branches.	Total ash in trees.	Total ash in 2,000 pounds green tree.
Apple	Hurlburt.....	42.4	46.9	10.7	4.34	2.89	4.92	2.01	3.68	15.43	11.36	4.32	31.11	40.4
Apple	Haas.....	27.0	54.9	18.1	5.64	2.04	3.93	2.07	3.33	6.72	4.93	3.13	14.78	41.6
Apple	Golden Sweet.....	36.4	43.1	20.5	3.53	2.29	3.04	1.66	2.88	4.34	3.34	2.10	9.78	33.3
	Average.....	35.3	48.3	16.4	4.50	2.41	3.96	1.91	3.30	.....	.....	.....	.....	.....
Cherry	Yellow-Spanish.....	42.0	40.0	18.0	3.38	1.99	4.66	1.67	3.04	12.07	6.76	7.14	25.97	33.3
Cherry	Napoleon Bigarreau.....	31.0	52.5	16.5	4.54	2.12	4.19	1.68	3.19	8.41	6.65	4.13	19.19	33.6
Cherry	Rockport Bigarreau.....	30.6	46.0	23.4	4.06	1.50	2.96	1.61	2.61	13.61	7.57	7.61	28.79	32.2
Cherry	Windsor.....	27.4	48.5	24.1	2.87	1.33	3.46	1.41	2.25	10.30	8.46	10.92	29.68	28.2
	Average.....	32.8	46.8	20.5	3.71	1.74	3.82	1.59	2.77	.....	.....	.....	.....	.....
Peach	Honest John.....	37.4	33.9	28.7	3.26	3.09	6.25	2.09	3.96	1.55	1.33	2.28	5.16	41.8
Peach	Red Roman.....	41.0	35.6	23.4	2.73	2.04	5.77	1.71	3.20	3.52	2.28	4.25	10.05	34.3
Peach	Large Early York.....	43.4	36.8	19.8	3.63	2.19	4.91	1.48	2.64	1.71	1.56	1.90	5.17	29.6
Peach	Heath Cling.....	40.7	35.1	24.2	3.04	2.07	4.42	1.56	3.01	3.71	2.27	3.34	9.48	31.2
Peach	Stump.....	38.4	40.3	25.3	2.79	2.54	3.88	1.80	3.30	1.71	1.82	2.42	6.95	36.0
Peach	Steven's Rareripe.....	36.4	49.4	14.2	2.12	1.91	3.53	1.10	1.70	1.78	2.16	1.15	5.09	21.9
Peach	Salway.....	39.1	37.5	23.3	3.40	1.78	3.15	1.56	2.74	2.99	1.51	1.65	6.15	31.2
Peach	Early Rivers.....	49.0	33.0	18.0	3.47	2.10	5.00	1.84	2.92	2.92	1.19	1.54	5.65	36.8
	Average.....	40.2	37.7	22.1	2.85	2.22	4.80	1.64	2.93	.....	.....	.....	.....	.....
Grape vines.	Mixed.....	.....	.....	100.0	.....	.....	3.07	1.59	3.07	.....	.....	5.36	5.36	31.8
Crab apples.	Hyslop.....	32.0	50.1	17.9	3.42	2.30	3.13	1.58	2.80	5.38	5.66	2.75	13.79	31.6
Crab apples.	Orange.....	35.0	49.5	15.5	4.51	4.27	4.40	2.43	4.37	7.86	10.53	3.39	21.78	48.7
	Average.....	33.5	49.8	16.7	3.92	3.29	3.77	2.01	3.59	.....	.....	.....	.....	.....
Pear	Vicar.....	37.7	40.4	21.9	2.97	4.05	6.20	1.57	4.08	5.70	8.34	6.91	20.95	31.4
Pear	Doyenne d'Ete.....	38.3	42.5	19.2	3.77	3.84	5.03	2.15	4.05	14.79	16.69	9.85	41.33	43.0
Pear	Bowell.....	33.3	48.9	17.8	5.19	2.79	3.99	2.22	3.76	13.27	10.49	5.47	29.23	44.4
Pear	Dutchess de Bordeaux.....	32.8	48.5	18.7	3.34	2.99	6.34	1.70	3.70	6.98	9.94	7.54	23.76	34.1
Pear	Flemish Beauty.....	20.1	60.9	19.0	2.64	2.88	4.18	1.53	3.07	4.13	13.58	6.21	24.02	18.4

PER CENT OF DRY MATTER AND ASH IN NURSERY STOCK — (Concluded).

Variety.	NAME.	Per cent of dry matter in roots.	Per cent of dry matter in trunk.	Per cent of dry matter in branches.	Per cent of ash in dry roots.	Per cent of ash in dry trunk.	Per cent of ash in dry branches.	Per cent of ash in green tree.	Per cent of ash in dry tree.	Weight ash in roots.	Weight ash in trunks.	Weight ash in branches.	Total ash in trees.	Total ash in 2,000 pounds green tree.
Pear	508 Russian	45.2	43.3	11.5	4.37	4.70	3.81	1.95	4.38	4.84	4.99	1.07	10.90	39.0
Pear	358 Russian	25.2	64.0	10.8	6.06	3.05	5.05	1.71	3.95	2.75	3.52	.99	7.26	34.2
Pear	Refreshing Russian	33.6	57.0	9.4	5.32	2.74	3.60	1.59	3.64	4.09	3.57	.77	8.43	31.8
	Average	33.3	50.7	16.0	4.21	3.38	4.78	1.81	3.83	.....	.....	.....	.....	.....
Plum	Coe's Golden	37.2	48.5	14.3	4.89	2.63	3.43	1.96	3.56	8.45	5.92	2.28	16.65	39.2
Plum	Gueli	30.8	35.0	34.2	4.24	1.87	4.13	1.87	3.35	8.45	4.24	9.15	21.84	37.5
Plum	Smith's Orleans	32.9	44.2	22.9	4.68	2.46	2.82	1.69	3.27	9.04	6.46	3.79	19.29	33.7
Plum	Peter's Yellow Gage	29.6	39.7	30.7	3.16	2.35	3.45	1.46	2.54	5.57	5.57	6.33	17.47	29.2
	Average	32.6	41.9	25.5	4.24	2.33	3.46	1.75	3.18	.....	.....	.....	.....	.....
Quinces	Missouri Mammoth	38.8	39.9	21.3	5.58	4.02	5.68	2.47	4.86	3.48	2.59	1.92	7.99	49.3
Quinces	Orange	48.7	29.9	21.4	5.13	3.85	4.28	2.56	4.54	14.77	6.76	5.38	26.91	51.1
	Average	38.8	34.9	21.4	5.38	3.94	4.94	2.52	4.70	.....	.....	.....	.....	.....

PERCENTAGE COMPOSITION OF ASH OF NURSERY STOCK.

		BRANCHES.									
		SiO ₂ .	P ₂ O ₅ .	Cl.	SO ₃ .	CO ₂ .	Fe ₂ O ₃ .	CaO.	MgO.	Na ₂ O.	K ₂ O.
Apple	Haas	1.81	7.35	1.19	3.02	21.83	.00	43.63	10.02	2.51	8.59
Apple	Golden Sweet	2.49	5.89	.29	2.96	29.24	.00	40.60	8.07	7.09	3.37
Apple	Hurlburt	2.60	4.44	.57	3.57	33.61	.64	41.55	2.88	4.98	5.16
	Average	2.30	5.89	.68	3.18	28.23	.21	41.94	6.99	4.86	5.71
Cherry	Napoleon Bigarreau	2.25	6.72	.27	5.04	22.21	.00	44.94	7.35	5.95	5.27
Cherry	Yellow Spanish	2.49	7.03	.25	2.68	24.30	.00	40.92	7.87	5.52	8.94
Cherry	Windsor	4.43	5.56	.36	2.36	24.00	1.33	41.51	6.52	4.15	9.78
Cherry	Rockport Bigarreau	3.34	3.85	.29	1.51	18.76	.46	45.50	7.24	11.20	7.85
	Average	3.13	5.79	.29	2.90	22.32	.45	43.22	7.27	6.71	7.96
Pear	Howell	5.82	5.09	.29	3.38	12.70	.00	43.54	9.55	8.02	11.61
Pear	Doyenne d'Ete.	3.76	5.99	.27	1.86	27.09	.00	38.50	6.23	7.33	8.97
Pear	Flemish Beauty	3.15	4.12	.28	3.36	21.77	.00	43.05	7.06	6.72	9.99
	Average	4.24	5.07	.28	3.03	20.52	.00	41.70	7.61	7.36	10.19

PERCENTAGE COMPOSITION OF ASH OF NURSERY STOCK—(Continued).

TRUNKS.											
		SiO ₃ .	P ₂ O ₅ .	CL.	SO ₃ .	CO ₂ .	Fe ₂ O ₃ .	CaO.	MgO.	Na ₂ O.	K ₂ O.
Apple	Haas.....	2.04	6.13	.40	7.55	21.77	.00	44.52	9.30	1.33	6.96
Apple	Golden Sweet.....	4.98	4.61	.28	1.17	30.46	.00	41.96	4.61	3.91	8.02
Apple	Hurlburt	3.33	4.08	.61	3.85	33.72	.00	44.80	5.22	2.48	1.31
	Average.....	3.65	4.94	.43	4.19	28.65	.00	43.76	6.38	2.57	5.43
Cherry	Napoleon Bigarreau	8.27	5.38	.23	3.60	28.18	1.26	39.62	5.59	3.18	4.69
Cherry	Yellow Spanish.....	6.39	5.30	.22	4.17	22.41	.94	41.09	6.13	5.29	8.06
Cherry	Windsor.....	5.53	4.22	.29	2.76	22.51	.72	41.44	6.45	8.13	7.95
Cherry	Rockport Bigarreau.....	4.30	3.42	.28	2.78	26.18	.40	44.80	5.43	4.79	7.62
	Average.....	6.12	4.58	.26	3.33	23.70	.83	41.74	5.90	5.35	7.08
Pear	Howell	3.59	3.93	.27	2.85	28.34	.23	44.48	6.40	3.27	6.64
Pear	Doyenne d'Ete.....	3.33	4.76	.29	2.72	29.31	.14	39.34	4.92	7.20	7.98
Pear.....	Flemish Beauty	4.00	3.77	.28	3.59	24.31	.37	41.98	6.69	7.38	7.63
	Average.....	3.64	4.15	.28	3.05	37.32	.25	41.93	6.00	5.95	7.42

PERCENTAGE COMPOSITION OF ASH OF NURSERY STOCK — (Concluded).

		Roots.									
		SiO ₂ .	P ₂ O ₅ .	Cl.	SO ₃ .	CO ₂ .	Fe ₂ O ₃ .	CaO.	MgO.	NaO.	K ₂ O.
Apple	Haas	26.84	9.44	0.42	5.11	1.42	4.32	32.98	9.30	4.74	5.43
Apple	Golden Sweet	27.65	7.71	0.45	2.83	20.66	3.00	26.99	4.84	3.87	2.00
Apple	Hurlburt	25.72	4.17	0.25	6.19	8.27	2.75	25.20	10.37	7.22	9.86
	Average	26.74	7.11	0.37	4.71	10.12	3.36	28.39	8.17	5.28	5.76
Cherry	Napoleon Bigarreau	31.92	5.80	0.25	4.05	18.48	2.29	22.40	4.68	3.63	6.50
Cherry	Yellow Spanish	32.68	8.67	0.26	5.84	9.08	2.24	22.89	5.39	7.42	5.53
Cherry	Windsor	37.55	7.86	0.28	4.24	9.35	2.83	20.93	4.44	6.16	6.06
Cherry	Rockport Bigarreau	33.70	5.51	0.45	2.39	16.23	2.28	25.20	4.52	3.95	5.77
	Average	33.96	6.96	0.31	4.13	13.29	2.41	22.86	4.83	5.29	5.97
Pear	Howell	24.44	3.25	0.24	3.74	16.82	1.96	37.94	4.16	2.58	4.87
Pear	Doyenne d'Ete	21.74	5.08	0.23	5.44	16.48	1.75	28.84	5.30	7.51	7.63
Pear	Flemish Beauty	35.46	6.25	0.24	4.84	3.90	2.32	30.59	3.68	2.55	10.17
	Average	27.21	4.86	0.24	4.67	12.40	2.01	32.46	4.38	4.21	7.56

AMOUNTS OF DIFFERENT CONSTITUENTS IN THE ASH OF NURSERY STOCK IN GRAMS.

	SiO ₂	P ₂ O ₅	Cl.	SO ₃	Fe ₂ O ₃	CaO.	MgO.	Na ₂ O.	K ₂ O.
1.....									
Hurlburt roots.....	4.07	0.64	0.04	0.95	0.42	3.86	1.60	1.11	1.52
Hurlburt trunks.....	0.45	0.05	0.07	0.44	0.00	5.09	0.59	0.28	0.15
Hurlburt branches.....	0.11	0.20	0.03	0.16	0.03	1.83	0.13	0.22	0.23
2.....									
Haas roots.....	4.63	0.89	0.14	1.55	0.45	10.78	2.32	1.61	1.90
Haas trunks.....	1.80	0.63	0.02	0.34	0.29	2.22	0.62	0.32	0.36
Haas branches.....	0.10	0.30	0.02	0.37	0.00	2.19	0.46	0.07	0.34
3.....									
Golden Sweet roots.....	0.06	0.33	0.04	0.09	0.00	1.37	0.31	0.08	0.27
Golden Sweet trunks.....	1.96	1.26	0.08	0.80	0.29	5.78	1.39	0.47	0.97
Golden Sweet branches.....	1.20	0.33	0.02	0.12	0.13	1.17	0.21	0.17	0.09
4.....									
Yellow Spanish roots.....	0.17	0.15	0.01	0.04	0.00	1.40	0.15	0.13	0.27
Yellow Spanish trunks.....	0.05	0.12	0.01	0.06	0.00	0.85	0.17	0.15	0.07
Yellow Spanish branches.....	1.42	0.60	0.04	0.22	0.13	3.42	0.53	0.45	0.43
5.....									
Napoleon Bigarreau roots.....	3.94	1.05	0.03	0.70	0.27	2.76	0.65	0.90	0.67
Napoleon Bigarreau trunks.....	0.43	0.36	0.01	0.28	0.06	2.78	0.41	0.36	0.54
Napoleon Bigarreau branches.....	0.18	0.50	0.02	0.19	0.00	2.92	0.56	0.39	0.64
6.....									
Napoleon Bigarreau roots.....	4.55	1.91	0.06	1.17	0.33	8.46	1.62	1.65	1.85
Napoleon Bigarreau trunks.....	2.68	0.49	0.02	0.34	0.19	1.88	0.39	0.31	0.55
Napoleon Bigarreau branches.....	0.55	0.36	0.02	0.24	0.08	2.63	0.37	0.21	0.31
7.....									
Napoleon Bigarreau roots.....	0.09	0.28	0.01	0.21	0.00	1.86	0.30	0.25	0.22
8.....									
Napoleon Bigarreau roots.....	3.32	1.13	0.05	0.79	0.27	6.37	1.06	0.77	1.08

AMOUNTS OF DIFFERENT CONSTITUENTS IN THE ASH OF NURSERY STOCK IN GRAMS—(Concluded).

	SiO ₂	P ₂ O ₅	CL	SO ₃	Fe ₂ O ₃	CaO	Mg. O.	Na ₂ O	K ₂ O
6..... {	Rockport Bigarreau roots.....	4.58	0.74	0.06	0.33	3.43	0.61	0.54	0.78
	Rockport Bigarreau trunks	0.33	0.26	0.02	0.21	3.39	0.41	0.36	0.58
	Rockport Bigarreau branches	0.25	0.29	0.02	0.11	3.46	0.55	0.85	0.60
7..... {	Windsor roots	5.16	1.29	0.10	0.65	10.28	1.57	1.75	1.96
	Windsor trunks	3.87	0.81	0.03	0.44	2.16	0.49	0.63	0.62
	Windsor branches.....	0.47	0.36	0.02	0.23	2.50	0.54	0.69	0.67
20..... {	Doyenne d'Ete roots	4.82	1.78	0.09	0.93	9.19	1.74	1.77	2.36
	Doyenne d'Ete trunks	3.21	0.75	0.03	0.80	4.26	0.78	1.11	1.13
	Doyenne d'Ete branches	0.56	0.79	0.04	0.45	6.57	0.82	1.20	1.33
21..... {	Howell roots.....	4.14	2.13	0.10	1.43	14.62	2.21	3.03	3.34
	Howell trunks	0.32	0.45	0.03	0.50	5.03	0.55	0.34	0.65
	Howell branches	0.38	0.41	0.03	0.30	4.67	0.67	0.34	0.70
23..... {	Flemish Beauty roots.....	1.02	1.14	0.08	0.99	12.08	1.74	1.12	1.99
	Flemish Beauty trunks	1.48	0.26	0.01	0.20	1.28	0.15	0.11	0.43
	Flemish Beauty branches	0.55	0.52	0.04	0.49	5.74	0.92	1.01	1.04
		0.20	0.26	0.02	0.24	2.67	0.44	0.42	0.62
		2.23	1.04	0.07	0.93	9.69	1.51	1.54	2.09

AMOUNT OF ASH CONSTITUENTS IN EACH TREE BY WEIGHT.

	SiO ₂ .	P ₂ O ₅ .	Cl.	SO ₃ .	Fe ₂ O ₃ .	CaO.	MgO.	Na ₂ O.	K ₂ O.	Green weight, grams.	Total ash, grams.	Ash in one ton, lbs.
Apple	4.63	0.89	0.14	1.55	0.45	10.78	2.32	1.61	1.90	1545.0	24.27	31.4
Apple	1.96	1.26	0.08	0.80	0.29	5.78	1.39	0.47	0.97	713.0	13.00	36.5
Apple	1.42	0.60	0.04	0.22	0.13	3.42	0.53	0.45	0.43	587.0	7.24	24.7
Cherry	4.55	1.91	0.06	1.17	0.33	9.73	1.62	1.65	1.85	1558.0	22.87	29.4
Cherry	3.32	1.13	0.05	0.79	0.27	6.37	1.06	0.77	1.08	1143.0	14.84	26.8
Cherry	5.16	1.29	0.10	0.65	0.38	10.28	1.57	1.75	1.96	1786.0	23.14	25.9
Cherry	4.82	1.78	0.09	0.93	0.50	9.19	1.74	1.77	2.36	2105.0	23.18	22.0
Pear	4.14	2.13	0.10	1.43	0.28	14.62	2.21	3.03	3.34	1923.0	31.28	32.5
Pear	1.02	1.14	0.08	0.99	0.28	12.08	1.74	1.12	1.99	1316.0	20.44	31.1
Pear	2.23	1.04	0.07	0.93	0.15	9.69	1.51	1.54	2.09	1625.0	19.25	25.2
Flemish Beauty.....	33.25	13.17	0.81	9.46	3.06	91.94	15.69	14.16	17.97	14201.0	199.51	.....
Ash in 2,000 pounds	4.73	2.00	0.12	1.33	0.56	12.95	2.21	2.00	2.53	.....	28.10	.....
Ash in eleven tons	52.0	22.0	1.3	14.6	6.2	142.5	24.3	22.0	27.8	.....	309.1	.....

AVERAGE RESULTS.

Average weight of green tree (32.6 oz.), grams.....	924.00
Average per cent of water in tree.....	46.27
Average per cent of dry matter in tree.....	53.73
Average per cent of ash in green tree.....	1.80
Average per cent ash in dry tree.....	3.35
Average per cent ash in dry roots	3.90
Average per cent ash in dry trunks	2.57
Average per cent ash in dry branches.....	4.17
Per cent of total ash in roots.....	40.20
Per cent of total ash in trunks	34.70
Per cent of total ash in branches	25.10
Per cent of total dry matter in roots.....	34.50
Per cent of total dry matter in trunks.....	45.20
Per cent of total dry matter in branches.....	20.20

Average weight of green trees was 924 grams. With rows four feet apart and trees one foot apart in row there would be on an acre 10,890 trees weighing 22,183 pounds or eleven tons. The average of the thirty-one trees gives 1.80 per cent of ash in the green tree, therefore there would be 399.3 pounds of ash removed by an average acre of nursery stock.

Quantitative analyses have been made of the ash of three apple trees, four cherries and three pear trees, and the average of these ten, which do not widely differ in composition, shows that, upon an average, there is taken from the soil in eleven tons of nursery stock the following mineral constituents, each having been determined except the carbonic acid of the ash:

POUNDS OF MINERAL MATTER REMOVED BY ELEVEN TONS OF
NURSERY STOCK.

	Pounds.
Silicic acid	50.6
Phosphoric acid	21.4
Sulphuric acid.....	14.3
Chlorine	1.3
Carbonic acid*.....	94.9
Ferric oxide.....	6.1
Lime	138.6

* The carbonic acid is estimated by difference,

	Pounds.
Magnesia	23.7
Soda	21.3
Potash	27.1
Total	399.3

For the purpose of comparison the following table is presented giving the number of pounds of the several mineral constituents removed by a ton of the grain and of the straw of each of our principal cereals, from which it will be seen that since, upon an average, it requires from three to four years to grow the crop of nursery stock, the cereals make a far greater demand upon the soil than does the growing of nursery stock, and it is a matter of common observation that the removal of a crop of trees leaves the soil in excellent condition for the growth of the cereals.

It is proposed to complete the ash analyses of the remaining portion of the trees, and also make analyses of the fruit of each variety during the next season.

IN 2,000 POUNDS OF GRAIN AND STRAW — POUNDS.

	SiO ₂ *	P ₂ O ₅ *	SO ₂	Cl.	Fe ₂ O ₃ *	MgO.	CaO.	K ₂ O.	Na ₂ O
Wheat grain .....	.8	18.4	.2	.2	.3	4.9	1.3	12.5	1.3
Rye grain	1.0	18.2	1.0	.4	.4	4.6	1.6	11.5	1.7
Barley grain	14.2	16.4	1.0	.6	.4	4.1	1.2	10.6	1.8
Oats grain	30.6	14.1	1.0	.3	.3	4.8	2.4	10.3	1.7
Maize grain .....	.6	12.7	.3	.1	.9	4.2	.8	7.7	.4
Wheat straw	74.6	5.7	2.7	2.9	.8	2.7	6.3	12.4	1.7
Rye straw	61.2	5.5	2.0	2.0	.8	3.0	8.2	16.0	2.7
Barley straw	56.3	4.7	3.9	3.9	1.5	2.5	8.0	22.5	4.3
Oats straw	51.5	4.3	3.4	8.4	1.7	4.0	7.7	21.3	6.7
Maize straw.....	31.7	9.1	5.7	5.7	2.6	6.3	11.9	38.9	1.4

THE DAIRY SCHOOL.

Under the direction of the State Dairymen's Association, a dairy school was held at the Station of ten days' duration, beginning August 24, 1891.

Prominent teachers and dairymen of the State, assisted by members of the Station staff, gave courses of lectures upon the several topics intimately associated with the dairy industry, and daily illustrations were given in the use of the separator and in churning and other details of butter-making.

The following was the programme of the course of lectures.

ORDER OF LECTURES AT THE GENEVA DAIRY SCHOOL.

The lectures to be given at the dairy school, to be held at the Agricultural Experiment Station, Geneva, N. Y., commencing August 25, 1891, was as follows:

August 25, A. M.—W. H. Gilbert, "Advantages of Dairying;" P. M., Dr. Collier, "Soils: Their Formation and Composition, and General Principles of Fertilization."

August 26, A. M.—A. R. Eastman, "Breeding for a Purpose;" P. M., Professor Roberts, "Inheritance."

August 27, A. M.—A. R. Eastman, "Management of the Dairy;" P. M., Professor Roberts, "Environment."

August 28, A. M.—W. H. Gilbert, "Care of Cattle;" P. M., Professor Roberts, "Habit."

August 29, A. M.—Dr. Collier, "Composition of Foods and Feeding Rations;" P. M., Professor Roberts, "Foods."

August 31, A. M., Dr. Van Slyke, "Chemistry of Milk, Cream, Skim Milk and Butter;" P. M., Dr. Collier, "Composition and Production of Milk."

September 1, A. M.—Dr. Van Slyke, "Physics of Milk;" P. M., George T. Powell, "Essentials in Successful Winter Dairying."

September 2, A. M.—Dr. Van Slyke, "Science Applied to Care of Milk, Methods of Creaming, etc.;" P. M., George T. Powell, "Co-operative Dairying."

September 3, A. M.—Dr. Van Slyke, "Relations of Micro-organisms to Milk, Cream and Butter;" P. M., W. H. Gilbert, "Butter-making."

September 4—Review of the work gone over during the course.

Methods of testing milk for fat were explained by Dr. Van Slyke each morning, when milk tests were made.

Milk tests or churning of butter took place every day from 9 to 10 A. M.

Lectures began at 10 A. M., and 2 P. M. Questions and answers followed each lecture.

The attendance upon the course was limited in number, but representatives from different portions of the State and several of the neighboring States and the Province of Ontario were present, and great interest was manifested in the proceedings during the entire course by those who were so fortunate as to avail themselves of the opportunity thus afforded them for advanced instruction by competent authorities in the several branches of practical and applied science pertaining to the dairy industry.

COMMERCIAL FERTILIZERS SOLD IN NEW YORK STATE.

While it is well known that the aggregate consumption of commercial fertilizers in the State reaches large proportions, there has been no serious effort made to determine, even approximately, the extent of the sales. While the excellence of barn-yard manure is everywhere admitted, chemical manure is found to supplement it most completely, and where there is a choice of purchasing between the two, there are many who buy the latter as being the cheapest. It is believed to be of public interest to determine the amount of those sales not only, but so far as possible the character of the fertilizers sold. A circular letter was addressed to the various manufacturers doing business in this State, requesting information as to the aggregate of their sales and also the quality of the fertilizers sold, in order that information might be obtained as to the relative consumption of phosphoric acid, potash and nitrogen compounds. It is not intended, of course, to make public the details of individual business, but to secure such general information concerning this trade as would appear to be of value to both manufacturers and consumers of these products. Nearly every one of the manufacturers addressed promptly responded to the circular asking for information. A list of these manufacturers is given for the purpose of showing how exhaustive and reliable the statistics collected are, and the aggregate of the sales reported given in the table following is about 90,333 :

NAMES OF FERTILIZER MANUFACTURERS WHO HAVE REPORTED THEIR SALES FOR THE YEAR ENDING NOVEMBER 1, 1891.

Allentown Manufacturing Co., Allentown, Penn.

Armour & Co., Chicago, Ill.

H. J. Baker & Brother, 215 Pearl street, New York, N. Y.

- Bowker Fertilizer Co., 43 Chatham street, Boston, Mass.
Bradley Fertilizer Co., Boston, Mass.
Brown & Gilman, 10 S. Delaware avenue, Philadelphia, Penn.
E. B. Chapin, Rochester, N. Y.
Charlotte Oil and Fertilizer Co., Charlotte, N. C.
Chemical Company of Canton, Baltimore, Md.
Chesapeake Guano Co., Baltimore, Md.
Cleveland Dryer Co., Cleveland, Ohio.
E. Frank Coe, 16 Burling slip, New York, N. Y.
Peter Cooper's Glue Factory, 17 Burling slip, New York, N. Y.
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.
E. A. Cross, North Parma, N. Y.
Dambmann Brothers & Co., Baltimore, Md.
L. B. Darling Fertilizer Co., Pawtucket, R. I.
J. H. Devins, Utica, N. Y.
L. Eggers' Sons, Novelty Bone Works, West Troy, N. Y.
Ellsworth, Tuthill & Co., Promised Land, Suffolk Co., N. Y.
W. S. Farmer & Co., Baltimore, Md.
Farmers' Fertilizer Co., Syracuse, N. Y.
George B. Forrester, 169 Front street, New York, N. Y.
Hallock & Duryee Fertilizer Co., Mattituck, Suffolk Co., N. Y.
Listers' Agricultural Chemical Works, Newark, N. J.
Lorentz and Rittler, Baltimore, Md.
Frederick Ludlam, 140 Maiden Lane, New York, N. Y.
Mapes Formula and Peruvian Guano Co., 158 Front street,
New York, N. Y.
Michigan Carbon Works, Detroit, Mich.
Milsom Rendering and Fertilizer Co., Buffalo, N. Y.
L. Mittenmaier, Rome, N. Y.
Moller & Co., Bone Works, Maspeth, Queens Co., N. Y.
New Process Fertilizer Co., Hart Lot, N. Y.
Northwestern Fertilizing Co., Union Stock Yards, Chicago, Ill.
Oneonta Fertilizing Co., Oneonta, N. Y.
Preston Fertilizer Co., Green Point, Kings Co., N. Y.
John S. Reese & Co., Baltimore, Md.
Rochester Fertilizer Co., 398 E. Main street, Rochester, N. Y.
Scott Fertilizer Co., Elkton, Md.
Sheldon Brothers, Weedsport, N. Y.
Springfield Fertilizer Co., Springfield, Ohio.

H. Stappenbeck, Utica, N. Y.

Sterling Oil Co., Greenport, Suffolk Co., N. Y.

Richard H. Stone, Trumansburg, N. Y.

I. P. Thomas & Son Co., 2 S. Delaware avenue, Philadelphia, Penn.

George F. Tuthill & Co., Greenport, Suffolk Co., N. Y.

Walker Fertilizer Co., Clifton Springs, N. Y.

Walker, Stratman & Co., Pittsburg, Penn.

Zell Guano Co., Baltimore, Md.

AGGREGATE AMOUNTS OF FERTILIZERS REPORTED AS SOLD IN THIS STATE
DURING THE YEAR ENDING NOVEMBER 1, 1891.

	Tons.
Complete manure for spring use	37,124.433
Complete manure for fall use... ..	23,725.650
Ammoniated superphosphates without potash, including dissolved bone, etc., for spring use	535.100
Ammoniated superphosphates without potash, including dissolved bone, etc., for fall use.....	347.900
Ground bone, for spring use.....	1,086.780
Ground bone, for fall use.....	834.133
Kainite, for spring use.....	384.500
Kainite, for fall use.....	213.000
Muriate of potash, for spring use	290.125
Muriate of potash, for fall use	119.625
Nitrogenous matter:	
(a) Ammonium sulphate, for spring use.....	161.000
Ammonium sulphate, for fall use	50.000
(b) Sodium nitrate, for spring use.....	107.850
Sodium nitrate, for fall use.....	40.250
(c) Blood, ammonite, etc., for spring use.....	178.850
Blood, ammonite, etc., for fall use.....	162.750
Plain superphosphates, including both dissolved bone black and S. C. acid phosphates, for spring use.....	1,035.300
Plain superphosphates, including both dissolved bone black and S. C. acid phosphates for fall use	977.500
	<hr/>
	67,374.746
Unclassified.....	22,958.200
	<hr/>
Total sales reported	90,332.946
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UNITED STATES DEPARTMENT OF AGRICULTURE,
DIVISION OF VEGETABLE PATHOLOGY.

WASHINGTON, D. C., April 23, 1892. }

Dr. PETER COLLIER, *Director N. Y. State Experiment Station,*
Geneva, N. Y.:

SIR.—In compliance with your request I herewith submit a brief report of work carried on by my assistant, Mr. D. G. Fairchild, at your Station during the season of 1891. Owing to the fact that the work is still in progress it seems best to mention simply the lines of work carried on and not the details.

Respectfully.

B. T. GALLOWAY,
Chief of Division.

OUTLINE OF WORK BY MR. FAIRCHILD IN 1891.

At the request and through the co-operation of a large number of nurserymen of Western New York, a series of experiments with nursery stock was planned. Stock for this experiment was contributed by various individuals and consisted of the most susceptible stocks of cherry, plum, quince, pear and apple to the total number of 9,500.

These plants were treated with the two well-known fungicides Bordeaux mixture and ammoniacal solution, with a view of ascertaining their effect on the stocks and their value as preventives of disease. These diseases were leaf-blight of pear and quince caused by the fungus *Entomosporium maculatum*, Lev.; leaf-blight of plumb and cherry caused by *Cylindrosporium padi*, Karsten; and powdery mildew of the apple caused by *Podosphaera oxycanthae* (DC) D. By.

The remarkable dry season prevented the appearance of several of the diseases and greatly retarded the appearance of others; and while various observations were thus prevented, Bordeaux mixture gave in all late treatments very encouraging results; details of this experiment, however, which was planned to cover two years are reserved for publication until its close.

In addition to the nursery experiment above outlined, an instructive experiment with plum seedlings was made upon the place of Mr. O'Brian of Geneva. This experiment, the details of which

will be published in a bulletin of the department, was made to ascertain the relative value of the ammoniacal solution* and a weak Bordeaux mixture† as preventives of leaf-blight. The result showed beyond question the efficacy of the latter over the former.

In the plum orchards of T. C. Maxwell & Bros. and A. Hammond, a comparative test of six different fungicides was made with a view of ascertaining if the early application of these mixtures would prevent leaf-blight and the consequent premature fall of the leaves, caused by *Cylindrosporium padi*, Karsten. These early treatments failed and the necessity of continuing the sprayings throughout the season was thus made manifest. In this case only dilute copper solutions, such as the ammoniacal, or a weak Bordeaux mixture, should be used.

Quince leaf-blight and fruit-spot were treated in the orchard of T. C. Maxwell & Bros., with five different fungicides. These were as follows, in the proportion of 0.1 ounces of the chemical to a gallon of water (two and three-fourth ounces per twenty-five gallons); Bordeaux mixture, normal cubic acetate, chloride of lime, malachite (basic cupric carbonate) and glue mixture and potassium sulphide; Bordeaux mixture, cupric acetate, and the mixture of malachite and glue proved effective and increased the percentage of fair fruit from eighteen to thirty-five per cent over that of adjoining trees, and forty to forty-five per cent over the average of untreated trees. On the other hand potassium sulphide and chloride of lime actually seemed to *increase* the amount of fruit spot from twenty to thirty-eight per cent over that of adjoining trees, and from nine to thirty-six per cent over that of the average of eighteen untreated trees.

At Brockport a series of tests was made upon forty trees, four standard fungicides being used. Owing to the non-appearance of the disease the experiments were wholly negative.

The presence of a destructive currant cane disease was established through the kindness of Mr. John Burroughs of West Park, on the Hudson. This gentleman sent in specimens of the diseased plants and offered an opportunity of examining them at his residence. The disease has been ascertained by means of

* Two ounces copper carbonate dissolved in twenty-six per cent ammonia and diluted with twenty gallons of water.

† Two pounds of copper sulphate and one pound of lime in twenty gallons of water.

culture and inoculation experiments to be contagious, but so far, neither in the field nor in the laboratory have any reproductive bodies, or spores, made their appearance. It is to be hoped that during the coming season the affected locality may be more definitely bounded, and the means by which the parasite is transmitted from place to place be certainly ascertained. At present the disease seems to be confined to the eastern portion of the State along the Hudson river.

OUTLINE OF WORK PROPOSED FOR 1892.

It is designed the coming season to continue the treatment of nursery stock already planted in accordance with the plans already laid out, and, if possible, to bring to completion the comparative test of the two principal fungicides as preventives of the several leaf-blight and powdery mildews. In addition, 100 plats have been planted with pear seed, upon which will be tested, through the co-operation of the horticulturist of the Station, twenty-five substances, with a view of ascertaining their efficiency in preventing the destructive pear leaf-blight the first and second seasons of growth.

WASHINGTON, D. C., *April 23, 1892.*

A brief summary of the work of the several members of the staff is presented in the report of the executive committee of the board of control, and I would refer to the several reports included in this volume for the details of this work which I am sure will commend itself as being well conceived and thoroughly executed as also of practical and scientific value. Certain portions of the work performed under the personal supervision of the first assistant in the investigation with poultry; of the chemist in the investigations relating to manufacture of butter and cheese; of the acting horticulturist upon the action of fungicides and other features of the work of the Station which it seemed desirable should be placed at once in the possession of the people, have been already partially presented in the published bulletins of the Station.

I desire to acknowledge the uniform faithfulness and zeal with which the multifarious labors of the Station have been performed by the several employes of the Station in whatever work has been assigned them, since to them largely is the credit due that so much has been accomplished.

REPORT OF THE FIRST ASSISTANT.

During the past year experiments with poultry have been continued, some feeding experiments with pigs have been made, and observations upon selected varieties of sorghum continued. Also the feeding of the dairy cattle has been attended to, the rations for the different animals, including on January 1, 1892, sixteen milch cows, six heifers and seven bulls, being arranged according to the appetite, condition, age and size. The grain food has been changed at intervals to supplement the forage and coarse fodder available during the several months of the year. The foods consumed by the different animals and the total amounts of the different constituents will be found in the tables of the bulletins and those elsewhere in the annual report. The collection of data in the field experiments with applications of crude chemicals was continued.

POULTRY.

The poultry work has been a continuation of experiments in regard to the "oyster-shell question," feeding experiments with rations for laying hens containing widely differing amounts of fat, feeding experiments with skim-milk for growing chicks, and also in regard to feeding salt to laying hens. Experiments in caponizing have been continued, and breeding experiments have been commenced.

The most conclusive results that point to the availability of the carbonate of lime in oyster shells, have been arranged in the following form for a bulletin :

During the past few years considerable discussion has occurred among poultrymen in regard to the question whether oyster shells were of any use to the hen as a source of material for the egg shell.

It is generally known that the ordinary grains fed to poultry are very deficient in lime, and some have sought to supply this deficiency, under the supposition that oyster shells were insoluble, by relying

solely upon some plant foods rich in lime, such as the clovers. Crushed oyster shells have been extensively fed and with good results, but it has been thought by many that they were of value solely as grit.

No satisfactory answer seems to have been made to the question and in order to obtain some definite information several experiments have been made during the past two years at this Station. Partial analyses were made of the soluble contents of the crops, gizzards and intestines of quite a number of hens, some having been fed oyster shells and some not, but only inconclusive results were obtained. The fact of considerable free acid always being present, however, indicated that the oyster shells might be dissolved.

It has generally been found difficult to keep hens laying for any length of time when so closely confined as to preclude the possibility of their obtaining food other than that intended for them, and several projected feeding trials have not been successful. During the past year, however, some feeding experiments have given such conclusive results that it is thought well to give the data in full to those interested in poultry feeding.

Six one-year-old hens (S. C. B. Leghorns) were used in these experiments. It was intended to carry on similar experiments with ducks (Pekin), but after being closely penned (not in small pens, however) the ducks would not lay well enough, and work with them was not completed.

Three hens were shut in a cleanly swept pen, having a wooden floor of matched boards, on March thirtieth, and were fed with wheat, fresh cabbage and a mixed grain containing two parts corn meal, two parts wheat bran, one part wheat middlings and one part linseed meal (o. p.). They were given all the water they would drink and a box of coarsely ground oyster shells was kept in the pen. No other grit or food was available to them, and no dust baths were used. The nest boxes were filled with "excelsior," none of which the hens ate. The droppings were removed several times each day. After ten days' confinement, as the hens continued laying it was assumed that very little, if any, of the vegetable food previously consumed could be furnishing material for eggs, and during the next ten days the eggs were saved and the shells and contents analyzed.

At the end of this first period of account, boiled eggs were also fed, and after feeding them for three days, the hens by that time having been closely confined for twenty-three days, all eggs laid were analyzed during a second period of twelve days.

The per cent of water in each food was determined at frequent intervals during the experiment and dried samples were analyzed.

The following table shows the per cent of calcium found in the ash of each food and in the eggs and the equivalent amount of carbonate of lime. In the oyster shells and the egg shells nearly all the lime present was in the form of carbonate.

	Average per cent of mois- ture.	Per cent of ash in fresh sub- stance.	Per cent of ash in water- free sub- stance.	Per cent of cal- cium (Ca) in ash.	Per cent Ca CO ₃ .
Mixed grain.....	13.7	3.54	4.10	3.66 equal to	9.14
Wheat	12.9	1.86	2.13	2.36 equal to	5.90
Cabbage	90.5	.66	6.94	4.04 equal to	10.10
Boiled eggs	71.4	1.05	3.67	8.23 equal to	20.57
Oyster shells .....	.....	.....	.....	.....	94.56
Egg shells .....	.....	.....	.....	.....	94.34
Membranes of eggs .....	.....	.....	4.38	10.96 equal to	27.40
Eggs (interior) ...	.....	.99	.....	5.72 equal to	14.30

It was intended that these hens should have only rain water to drink, but through a misunderstanding spring water was given them part of the time. The actual amount of water taken by the hens at this time is not known, but the amount measured out to them, and which they could not have exceeded, gives a limit to the amount of lime that could have been obtained from this source.

This water contained in solution 358.3 parts of total solids in the million and 287.3 parts of inorganic matter; 58.2 per cent of the inorganic matter was carbonate of lime.

The results obtained during these two periods can best be shown in the following tabulated form :

LOT 1 — OYSTER SHELLS — FIRST PERIOD — TEN DAYS — APRIL
NINTH TO APRIL NINETEENTH.

FOODS.	Total substance consumed.	Water-free substance consumed.	Ash in food con- sumed.	Calcium (Ca) in food con- sumed.	Equivalent of calcium carbonate (Ca CO ₃).
	Grammes.	Grammes.	Grammes.	Grammes.	Grammes.
Mixed grain	1275.7	1100.9	45.13	1.65	4.12
Wheat	1077.3	938.3	19.99	.47	1.18
Cabbage	283.5	26.9	1.87	.08	.19
Water	12760.0	4.57	3.66	.85	2.13
Total, except oyster shells	2636.5*	2066.1*	70.65	3.05	7.62
Oyster shells	99.2	.....	.....	.....	93.80

* Exclusive of drinking water.

PRODUCTS.	Total substance.	Water-free substance.	Ash.	Calcium Ca.	Equivalent of Ca CO ₃ .
	Grammes.	Grammes.	Grammes.	Grammes.	Grammes.
Eggs (entire).....	523.2	.....	.....	.....	.....
Shells .....	.....	50.6	.....	.....	47.74
Lining membranes....	.....	2.7	.12	.....	.03
Eggs (whole interior) .	469.9	.....	4.60	.26	.66

LOT 1 — OYSTER SHELLS — SECOND PERIOD — TWELVE DAYS —
APRIL TWENTY-FIRST TO MAY THIRD.

FOODS.	Total substance consumed.	Water-free substance consumed.	Ash in food consumed.	Calcium (Ca) in food consumed.	Equivalent of calcium carbonate (CaCO ₃ .)
	Grammes.	Grammes.	Grammes.	Grammes.	Grammes.
Mixed grain.....	1357.1	1171.2	48.02	1.76	4.39
Wheat	1268.6	1104.9	25.53	.56	1.39
Cabbage	340.2	32.3	2.24	.09	.23
Boiled eggs.....	701.6	200.7	7.37	.61	1.52
Water	15300.0	5.48	4.39	1.02	2.55
Total, except oyster shells.....	3667.5*	2509.1*	85.55	4.04	10.08
Oyster shells	191.4	.....	.....	.....	180.99

PRODUCTS.	Total substance.	Water-free substance.	Ash.	Calcium (Ca).	Equivalent of Ca CO ₃ .
	Grammes.	Grammes.	Grammes.	Grammes.	Grammes.
Eggs (entire).....	966.4	.....	.....	.....	.....
Shells .....	.....	91.8	.....	.....	86.60
Lining membranes....	.....	4.4	.19	.02	.05
Eggs (whole interior) .	870.2	.....	8.61	.49	1.23

During the first period the hens laid twelve eggs; one pound of eggs being produced from 3.95 lbs. of water-free food. These eggs contained calcium equal to 48.43 grammes carbonate of lime, the shells alone containing 47.74 grammes. The grain food and cabbage consumed and the drinking water given them contained altogether

* Exclusive of drinking water.

calcium equal to 7.62 grammes carbonate of lime. The oyster shells taken by them contained 93.80 grammes carbonate of lime.

During the second period the hens laid twenty-one eggs, which were produced at the rate of one pound for every 2.59 lbs. of water-free food. These eggs contained calcium equal to 87.88 grammes carbonate of lime, the shells alone containing 86.6 grammes. The food consumed and drinking water given them contained calcium equal to 10.08 grammes carbonate of lime. The oyster shells taken by them contained 180.99 grammes carbonate of lime. Of the carbonate of lime contained in the eggs during the first period 40.81 grammes, over eighty-four per cent, and of that in the eggs during the second period 77.80 grammes, over eighty-six per cent, is unaccounted for except by the carbonate of lime in the oyster shells, of which 99.2 grammes were consumed during the first period and 191.4 grammes during the second.

The difference is so great that no other conclusion seems possible than that the egg shells were constructed from material supplied in large part by the oyster shells.

These hens lost in weight a total of five ounces during the first period and a total of two ounces during the second, a change in weight of little consequence and one that might have occurred at any time within a few hours.

At the same time with these feeding trials another lot of three hens was fed under exactly similar conditions except that coarsely pounded glass was given the hens instead of oyster shells. No dark colored or opaque glass was used, broken bottles, carboys and window glass furnishing the supply. An average sample of the glass contained 5.44 per cent of calcium, no trace of which, however, was soluble in nitric or hydrochloric acid or aqua regia.

These hens did not lay as well as those having oyster shells, and two became sick (feverish and unable to stand). They recovered in about two days, however, after a little alcohol and oil was given them and the glass removed from the pen. Although pounded glass has been given to hens and chicks here for two years this is the only time that any symptoms of disease have been observed to accompany its use. The trouble was probably due to the excessive amount of glass swallowed, for while the oyster shells eaten by the hens formed 4.5 and 7.1 per cent of the total water-free material, the glass formed 31.3 per cent of the total water-free material eaten by the hens in the first period, and in the second when the hens were allowed less than they wanted, 26.1 per cent. Or in the one period the hens consumed an amount of glass weighing 45.8 per cent as much as all the dry matter of

the ordinary food. These hens gained in weight during the first period eleven ounces, and lost during the second period nine ounces. Although fewer eggs were laid by this lot the shells were lighter, being in the first period 8.12 per cent of the total weight of the eggs, and in the second period 6.18 per cent, while the shells of eggs laid by the lot having oyster shells formed 9.67 per cent and 9.50 per cent of the total weight of the eggs.

The egg shells contained 92.42 per cent carbonate of lime and the ash of the eggs exclusive of shell 4.96 per cent of calcium equal to 12.4 per cent of carbonate. The eggs for the first period contained 1.01 per cent and those of the second period .98 per cent of ash.

The data for these two periods are briefly stated in the following tables. Only two hens were used during the second period:

LOT 2—GLASS—FIRST PERIOD—TEN DAYS—APRIL NINTH TO
APRIL NINETEENTH.

FOODS.	Total substance consumed.	Water-free substance consumed.	Ash in food con- sumed.	Calcium (Ca) in food.	Equivalent of calcium carbonate (CaCO ₃)
	Grammes.	Grammes.	Grammes.	Grammes.	Grammes.
Mixed grain.....	567.0	489.3	20.06	.73	1.83
Wheat.....	1559.2	1358.1	28.93	.68	1.71
Cabbage.....	283.5	26.9	1.87	.08	.19
Water.....	12760.0	4.57	3.66	.85	2.13
Total, except glass.	2409.7*	1874.3*	54.52	2.34	5.86
Glass.....	857.6	.....	.....	46.65	116.63

PRODUCTS.	Total substance.	Water-free substance.	Ash.	Calcium (Ca).	Equivalent of CaCO ₃ .
	Grammes.	Grammes.	Grammes.	Grammes.	Grammes.
Eggs (entire).....	128.0	.....	.....	.....	.....
Shells.....	.....	10.4	.....	.....	9.61
Lining membranes...	.....	.6	.03	.....	.01
Eggs (whole interior)	117.0	.....	1.18	.06	.15

* Exclusive of drinking water.

LOT 2 — GLASS — SECOND PERIOD — TEN DAYS — APRIL TWENTY-THIRD TO MAY THIRD.

FOODS.	Total substance consumed.	Water-free substance consumed.	Ash in food consumed.	Calcium (Ca) in food.	Equivalent of calcium carbonate. (CaCO ₃ .)
	Grammes.	Grammes.	Grammes.	Grammes.	Grammes.
Mixed grain	322.3	278.1	11.40	.42	1.04
Wheat.....	460.7	401.3	8.55	.20	.50
Cabbage.....	283.5	26.9	1.87	.08	.19
Boiled eggs.....	326.0	93.2	3.42	.28	.70
Water.....	12760.0	4.57	3.66	.85	2.13
Total, except glass.	1392.5*	799.5*	28.90	1.83	4.56
Glass.....	283.5	.....	.....	15.42	38.56

PRODUCTS.	Total substance.	Water-free substance.	Ash.	Calcium.	Equivalent of CaCO ₃ .
	Grammes.	Grammes.	Grammes.	Grammes.	Grammes.
Eggs (entire).....	129.5	.....	.....	.....	.....
Shells .....	.....	8.0	.....	.....	7.39
Lining membranes....	.....	.5	.02	.....	.01
Eggs (whole interior)..	121.0	.....	1.17	.06	.14

It will be seen that the amount of lime calculated as carbonate, found in the eggs, exceeded that in the food and drinking water by 3.9 grammes for one period, and nearly three grammes for the other.

While the glass taken during one period contained lime the equivalent of 116.63 grammes of carbonate and during the other of 38.56 grammes, it does not appear probable that any of this was available as egg-shell material for it existed in combination with various insoluble silicates. Treatment of the finely powdered glass with the ordinary acids failed to dissolve a trace of lime, and fusion with alkaline carbonates was necessary to its estimation. Upon examination of the excrement, of which during the first period over seventy-two per cent of the air dried substance consisted of fragments of glass large enough to be easily removed by washing, a very few small rounded fragments of limestone were found which must have been swallowed by the hens previous

* Exclusive of drinking water.

to their close confinement and retained for from ten to twenty days. These small pebbles of limestone had been subjected to conditions which are seen to have made oyster shells available material, and it is probable that enough lime was dissolved from them or from smaller fragments, no appreciable portions of which were left in the excrement, to have supplied the three or four grammes of lime. Hens that have been allowed free access to pounded glass mixed with oyster shells, ground bone and charcoal or with either oyster shells or bone have never been observed to take such an unnecessarily large amount of "grit," and it seems not improbable that in this case they were instinctively searching for something which the glass alone failed to supply.

GENERAL REMARKS.

The feeding of oyster shells during the laying season, where they can be cheaply obtained, is recommended. One pound will contain lime enough for the shells of about seven dozens of eggs.

Fine gravel containing limestone will probably as well supply the deficiency of lime existing in most foods, but the use of some sharper grit with it may be of advantage.

Long or sharp splinters of glass or dry bone should be avoided. The size of particles of grit had, for hens, better be larger than that of a kernel of wheat and should be smaller than that of a kernel of corn.

An unlimited supply of pounded glass has been attended with no bad result when the food and other grit available to the fowls contained an abundance of lime, but, when the food was deficient in lime and no other grit was attainable, hens ate an injuriously large amount of glass.

SKIM-MILK FOR GROWING CHICKS.

During the past year quite a number of chicks were grown to maturity at this Station with no drink other than skim-milk being given them, excepting not more than three or four days when skim-milk was not available and water was supplied. No water was accessible to them except as dew, or that to be found for a few hours after a rain. These chicks were raised by the ordinary method of keeping them with a hen in a small coop, the chicks being allowed to run at will over the grass in a young apple orchard. No sickly chicks were at any time noticed among them, the few lost when young being from accident and from lice getting among one brood. The growth of feathers was much more rapid and full than usual, and this was especially noticeable in the case of Light Brahma chicks.

In order to obtain information as to the cost of growing chicks by the methods in general use on farms, where skim-milk can be obtained, two lots of chicks were grown in pens. The pens were 10x12 feet, having a tight wooden floor. The open yards connecting with them, and which were deeply covered with coal ashes, were 11x20 feet. A hen was kept with each pen of chicks until they were pretty well feathered — with one pen seven and one-half weeks and the other five and one-half weeks. The chicks were of several breeds and crosses — B. Minorca, W. P. Rock-Light Brahma, Indian Game Cochin, cross; P. Rock-Minorca, cross. They were from one to three days old at commencement of feeding experiment, and the total cost of food from hatching until this time was less than one cent for each lot. During most of the experiment fourteen chicks were in one pen and sixteen in the other. More chicks were put in at the start, but the visit of a rat reduced the number. The chicks and hens were weighed once a week.

No green food was fed to one pen until the chicks were about six weeks old, and not to the other pen until eleven and one-half weeks old. The skim-milk, of which they had most of the time an abundant supply, was usually sweet. One pen (No. 11) was without milk for eight days (from Sept. 17 to Sept. 25), when water was substituted, and during this time they made a smaller gain for the food consumed than at any other.

The results averaged for periods of one and two weeks are given in the following tables:

PEN No. 10 — HEN AND CHICKS.

PERIOD.		Average age of chicks.	Average weight per chick at end of period.	Gain in weight of chicks.	Gain in weight of hen.	Mixed grain, average per day.	Wheat, average per day.	Skim-milk, average per day.	Clover forage, average per day.	Total food average per day.	Total water-free food per day.	Water-free food for 1 pound gain live weight of chicks.	Cost of food per day.	Water-free food consumed per day for each pound live weight hen and chicks.	Water-free food consumed per day for each pound live weight chicks.	Ots.	Cost of food for 1 pound gain in live weight.
Number of chicks.	Number of days.	Days.	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.	Lbs.	Cts.	Oz.	Oz.	Cts.	
18.	9	June 8 to June 17	10	3.35	32	4	8.9	29.8	.....	38.7	10.9	3.06	1.00	1.45	.....	4.50	
14.	15	June 17 to July 2	25	8.2	68	10	10.6	29.0	.....	43.3	15.6	3.43	1.48	1.52	.....	5.22	
14.	14	July 2 to July 16	39	15.0	95	6	16.6	44.6	.....	65.7	23.1	3.40	2.16	1.46	.....	5.71	
14.	14	July 16 to July 30	53	24.6	134	18	19.4	55.2	.....	84.6	31.4	3.28	3.07	1.32	.....	5.13	
14.	7	July 30 to August 6	60	28.6	56	.....	13.6	43.6	.....	74.8	31.7	3.96	3.16	.....	1.36	6.31	
14.	14	August 6 to August 20	74	38.6	140	.....	13.2	48.0	.....	79.8	32.8	3.28	3.24	.....	1.12	5.19	
14.	7	August 20 to August 27	81	43.9	74	.....	15.9	58.9	.....	94.8	37.4	3.54	3.76	.....	1.04	5.70	
13*	14	August 27 to September 10	95	56.0	164	.....	20.6	56.8	2.0	97.6	40.3	3.44	4.12	.....	1.01	5.63	

* One cockerel removed for caponizing.

PEN No. 11 — HEN AND CHICKS.

Number of chicks.	Number of days.	PERIOD.	Average age of chicks.	Average weight per chick at end of period.	Gain in weight of chicks.	Gain in weight of hen.	Mixed grain, average per day.	Wheat, average per day.	Skimmed milk, average per day.	Meat scraps, average per day.	Clover forage, average per day.	Total food per day.	Total water-free food per day.	Water-free food for 1 pound gain in weight of chicks.	Cost of food per day.	Water-free food consumed per day for each pound live weight of hen and chicks.	Water-free food consumed per day for each pound live weight chicks.	Cents.	Cost of food for 1 pound gain live weight of chicks.
17..	17	July 20 to August 6.....	19	4.6	56	10	5.9	3.7	18.9	1.0	.....	29.5	11.3	3.63	1.20	1.57	.....	6.13	.....
16..	14	August 6 to August 20.....	33	10.6	85	13	7.6	6.7	28.7	2.4	.....	45.4	17.8	2.94	1.99	1.43	.....	5.28	.....
16..	7	August 20 to August 27.....	40	13.1	49	6	9.3	7.0	44.1	3.0	.....	63.4	21.6	3.03	2.44	1.28	.....	5.59	.....
16..	14	August 27 to September 10.....	54	21.9	140	.....	12.3	13.2	36.4	2.6	.5	65.0	28.6	2.86	3.08	.....	1.63	4.92	.....
16..	14	September 10 to September 24.....	68	28.4	104	.....	17.8	13.7	18.2	2.0	.5	52.2	31.4	4.22	3.09	.....	1.25	6.66	.....
16..	14	September 24 to October 8.....	82	38.6	163	.....	16.9	17.0	50.9	2.1	3.0	89.9	37.7	3.28	3.92	.....	1.12	5.33	.....
16..	7	October 8 to October 15.....	89	43.5	79	.....	24.0	15.9	50.9	3.0	3.0	96.8	43.6	3.86	4.37	.....	1.06	6.15	.....

The mixed grain was composed of two parts corn meal, two parts wheat bran, one part wheat middlings and one part linseed meal, and is calculated at twenty dollars per ton. The wheat is rated at one dollar per bushel, the skim-milk at twenty-five cents per hundred pounds, the clover forage at two dollars per ton, and meat scraps at two and one-half cents per pound.

With one pen the average cost of food for every pound increase in weight during the whole time was 5.66 cents. For the other the cost of increase for all but the last two weeks was 5.36 cents and during these two weeks 5.63 cents. The cost per pound gain in weight for each period will be found in the tables. In one pen chicks averaging 2.4 pounds weight at $10\frac{1}{2}$ weeks of age were grown at a cost for food of 5.31 cents per pound, or an average of 12.7 cents apiece. In the other pen chicks averaging 2.4 pounds at $11\frac{3}{4}$ weeks of age cost for food 5.36 cents per pound, or 12.9 cents apiece. This cost of production of course includes the cost of feeding the hen during the first few weeks. These results are not so good as are those sometimes reported by incubator manufacturers, but they are obtained by methods that are well understood and in use among farmers. Although these chicks were rather closely confined they were kept freer from lice than, unfortunately, are the chicks as a rule on farms.

Under ordinary conditions, chicks ought to be hatched, making a fair allowance for value of eggs and food for sitting hens, at a cost of less than five cents apiece. The highest cost per pound gain during any week, while growing chicks to three and one-half pounds average weight, was less than seven cents, and the cost averaged much less than six cents. At the prices generally obtained for chicks of this and lesser weights, the growth was certainly a profitable one. With chicks having the liberty of the fields it seems reasonable to expect a still cheaper production of meat, and it would appear that a profitable use for some of the skim-milk of the farm would be in the growing of chicks for home use or for the market.

An unlimited supply of sweet skim-milk can apparently be given to chickens with advantage, but sour milk must be fed with caution. Where sour milk only is available it is best to coagulate thoroughly by moderate heating, and feed only the curd, straining out as much of the whey as possible.

FEEDING TALLOW TO HENS.

In order to observe the effect of feeding more than an average amount of fat in a ration, two pens of hens were fed for a few months, one having as much tallow as was readily eaten with a moderate grain ration, and the other having a similar ration with linseed meal (o. p.) substituted for the tallow.

This feeding trial was not begun until March third, and although it extended over the larger part of the ordinary laying season it did not include the whole. From May fifth to October sixth, during the latter five months, eight hens were in each pen and, for the two months preceding, fewer (six, five and four). The fowls were S. C. B. Leghorns with the exception of two of Game-Wyandotte cross in each pen. There was fed, besides tallow and linseed meal, wheat, corn silage, cabbage, alfalfa forage, timothy forage and two grain mixtures. Mixture No. 10 contained six parts wheat bran, three parts wheat middlings and one part linseed meal. Mixture No. 16 contained six parts wheat bran, three parts corn meal, two parts linseed meal. The results are averaged in the tabular statement for irregular periods, consisting of from twenty-one to forty-eight days, according to the green foods, etc., available.

Although there was a constant and considerable difference between the two rations, neither ration was an extreme. The ratio of total protein to the total carbohydrates was, on the average for the seven months, 1:4.47 in the linseed meal ration, and 1:5.53 in the tallow ration. With the weight of fats multiplied as usual the average ratios were 1:4.78 and 1:6.75. The proportion of fats to the total water-free food showed, however, greater difference, in the one ration being that of 1:29.5 and in the other 1:8.1.

The average egg product was somewhat in favor of the hens having the less fat in their food, and the average size of the eggs laid by them was a little larger. During one period, however, of forty-two days in July and August more eggs were obtained from the hens having tallow. During the first period while the hens were newly confined there were few eggs laid, and during the latter period many hens were molting.

The greatest difference observed was that the hens having the linseed meal molted nearly all at the same time, earlier

in the season and more rapidly. Only few of the hens which had been fed tallow had begun to molt at the close of this feeding trial, October sixth, by which time several hens from the other pen were in new plumage. The tallow ration was apparently too deficient in nitrogen to encourage the growth of new feathers, and the results are in support of the advice to feed during the summer a highly nitrogenous ration to help early molting.

The amount of tallow fed was not enough to affect the health of the fowls, and they were throughout in better apparent condition than those of the other pen. The average weight of the tallow-fed hens was but slightly the greater.

The average data for these two pens are given in the following tabulated form :

LOT A—LESS FAT.

Number of fowls.	Days in period.	PERIOD.	Average live weight at beginning.		Average live weight at end.		Average gain or loss in weight.	AVERAGE PER DAY PER FOWL.						
			Lbs.	Oz.	Lbs.	Oz.		Water-free mixed grain No. 10.	Water-free mixed grain No. 16.	Water-free wheat.	Water-free linseed meal.	Water-free silage.	Water-free cabbage.	Water-free alfalfa.
6	27	March 3 to March 30	3	3.8	3	12.8	Ounces. + 9.0	Ounces. .89	Ounces.	Ounces. 2.04	Ounces. .14	Ounces. .06	Ounces.	Ounces.
4	37	March 30 to May 5	3	12.0	2	15.2	-12.8	.55	.....	1.33	.20	.03	.04	.....
8	21	May 5 to May 26	2	13.6	2	14.4	+ .8	.68	.....	1.19	.11	.05	.....	.....
8	42	May 26 to July 7	2	14.4	2	10.0	- 4.4	.....	.73	1.58	.20	.01	Timothy forage.	.09
8	42	July 7 to August 19	2	10.0	2	12.5	+ 2.5	.....	.40	1.35	.20	.....	.....	.13
8	48	August 19 to October 6....	2	12.5	3	2.6	+ 6.1	.....	.63	1.45	.21	.....	.04	.03

LOT A—LESS FAT—(Continued).

Number of fowls.	Days in period.	PERIODS.	AVERAGE PER DAY PER FOWL.					Ratio of protein to carbo- hydrates with fats $\times 2\frac{1}{2}$.	TOTAL PER FOWL.			Pounds of water- free food to produce one lb. of eggs.
			Total fresh and air dry food.	Total water- free food.	Total protein in food.	Total nitrogen- free extract in food.	Total fat in food.		Number.	Eggs.	Weight.	
6	27	March 3 to March 30	Ounces. 3.81	Ounces. 3.13	Ounces. .493	Ounces. 2.280	Ounces. .084	1:4.8	3.50	Ounces. 5.94	Lbs. 14.23	
4	37	March 30 to May 5	2.99	2.15	.363	1.521	.070	1:4.4	16.75	29.29	2.72	
8	21	May 5 to May 26	2.47	2.03	.328	1.451	.064	1:4.6	7.13	11.83	3.56	
8	42	May 26 to July 7	3.28	2.61	.443	1.822	.097	1:4.3	22.00	36.74	2.96	
8	42	July 7 to August 19	2.79	2.08	.357	1.446	.075	1:4.3	9.25	16.22	5.48	
8	48	August 19 to October 6	2.91	2.36	.399	1.654	.086	1:4.4	4.52	8.34	13.58	

LOT B—MORE FAT.

PERIOD.		AVERAGE PER DAY PER FOWL.														
Number of fowls.	Days in period.	Average live weight at beginning.		Average live weight at end.		Average gain or loss in weight.	Water-free mixed grain No. 10.		Water-free mixed grain No. 16.		Water-free wheat.	Water-free tallow.	Water-free silage.	Water-free cabbage.	Water-free alfalfa.	
		Lbs.	Oz.	Lbs.	Oz.		Ounces.	Ounces.	Ounces.	Ounces.						
6	27	March 3 to March 30		3	1.7	3	13.8	Ounces.	12.1	Ounces.	2.21	Ounces.	.16	Ounces.	.06	Ounces.
5	37	March 30 May 5		4	0.0	2	15.8		18.0		.72		.19		.02	.04
8	21	May 5 to May 26		2	15.3	3	0.1		.8		.58		.23		.05	
8	42	May 26 to July 7		3	0.1	3	2.3		2.2	.62	1.45	.24	.24		.02	Timothy forage.
8	42	July 7 to August 19		3	2.3	3	0.0		2.3	.97	1.40	.25				
8	48	August 19 to October 6 ...		3	0.0	3	3.4		3.4	.26	1.16	.24				.04

LOT B—MORE FAT—(Concluded).

Number of fowls.	Days in period.	PERIOD.	AVERAGE PER DAY PER FOWL.					Ratio of proteine to total carbohy- drates.	Ratio of proteine to carbo- hydrates with fats. $\times 2\frac{1}{2}$.	TOTAL PER FOWL.			Pounds of water- free food to produce one lb. of eggs.
			Total fresh and air dry food.	Total water- free food.	Total proteine in food.	Total nitrogen- free extract in food.	Total fats in food.			Number.	Eggs.	Weight.	
			Ounces.	Ounces.	Ounces.	Ounces.	Ounces.					Ounces.	Lbs. 11.13
6	27	March 3 to March 30	4.07	3.37	.478	2.389	.240	1:5.5	1:6.3	4.67		8.17	3.00
5	37	March 30 to May 5	2.77	2.07	.295	1.365	.233	1:5.4	1:6.6	14.60		25.50	5.15
8	21	May 5 to May 26	2.33	1.89	.254	1.217	.266	1:5.8	1:7.4	4.75		7.71	4.08
8	42	May 26 to July 7	3.04	2.41	.338	1.573	.300	1:5.5	1:6.9	14.63		24.76	5.01
8	42	July 7 to August 19	3.46	2.86	.404	1.752	.325	1:5.1	1:6.4	15.00		20.41	8.00
8	48	August 19 to October 6	2.12	1.72	.228	1.106	.269	1:6.0	1:7.8	5.75		10.28	

FEEDING SALT TO HENS.

Salt has generally been fed to hens at this Station, although in small quantities, and no injurious results have been observed to accompany its use. A short trial was made with some two-year-old hens to get indications of the amount possible to feed without injury. Six hens (two Brahmas, two Cochins and two Game crosses in each pen) were confined August twenty-seventh in each of two small pens, 5x8 feet, having yards attached 5x28 feet. They were fed similar rations, consisting of a mixed grain, wheat and grass, and plenty of water was allowed them. The mixed grain contained five parts corn meal, five parts wheat bran, three parts linseed meal (N. P.) and two parts wheat middlings.

Those of one pen were fed salt in their food at the rate per day for each fowl of .021 ounces during the first thirteen days, then for nineteen days .042 ounces per day, and then during nine days .063 ounces per day. After this the amount was reduced to .042 ounces per day and continued for twenty days. This salt the hens were obliged to eat, for it was mixed in their food. Until the amount of .063 ounces per day for each hen was fed (at the rate of 6.3 ounces, nearly one-half pint, a day for 100 hens) no bad effects were observed. This amount, however, was sufficient to cause diarrhoea in two of the hens. Upon reducing the amount of salt to .042 ounces per hen the trouble disappeared without other treatment.

After these hens had been confined two months (on October twenty-seventh), one pen having had no salt whatever and the other all that was consistent with good health, a shallow box of salt (five pounds) was placed on the floor of each pen. After this, salt was no longer mixed with the food but the box of salt was kept in each pen for a month. Although the salt was picked over a little by the hens, not enough was eaten to injure the health of any, and the trial was carried no further.

The total gain in weight per fowl during the first two months was for those having salt, 8.2 ounces and for the others 10.5 ounces. During the last month it was for those having had salt an average of 2.8 ounces, and for the others 8.7 ounces. The total grain food consumed per day was for the salt-fed pen 4.17 ounces per fowl during first two months and

4.28 ounces during the last month. For the other pen the average was 3.40 ounces per day for the two months and 4.13 ounces for the last month. During the first two months ninety-four eggs were obtained from the pen having salt, and during the last month but one egg; while forty-seven eggs were obtained from the other pen during the two months and fourteen during the last month. The number of eggs laid during this trial is of not great significance, as it was about the end of the laying season and the hens were old; but inasmuch as the yield of eggs was twice as great from the hens having salt, while it was mixed in the food, it would appear that not enough was fed to very injuriously affect egg production.

The salt used was ordinary barrel-salt, although not coarse. Should rock salt be exposed or salt that contained large crystals or fragments as large as the particles of gravel and grit eaten by hens it would, of course, not take long for a fatal amount to be swallowed. For mature fowls it is probable that salt at the rate of one ounce per day for 100 fowls could, under ordinary conditions, be fed without injury.

PRESERVING EGGS.

As many inquiries have been made in regard to keeping eggs, several methods which are often recommended have been tried at this Station. Many methods of dry packing have proved very unreliable, and the only eggs that have been preserved at all well by dry packing have been those kept in common salt. Eggs to be packed in salt were first wiped with a rag greased with vaseline, to which had been added a small amount of either salicylic acid or boracic acid. A serious disadvantage of keeping eggs in salt, is that the yolks quite often become coagulated or hardened.

The method most generally employed where cold storage is not available is that of preserving in a solution of lime and salt, and this is probably the most successful method in use. A solution which has given very excellent results can be made as follows:

Mix four quarts of fine slacked lime and one quart of common salt in five gallons of water. Stir thoroughly several times, and after all is dissolved that is possible (better to let stand for day and half), decant the clear liquid into a glazed earthenware or wooden vessel. Then add one-half ounce of boracic acid. The

eggs are put in the solution, and it is well to keep the liquid at the depth of three inches above the eggs. The jars or tubs of eggs should be kept in a cool place, and not disturbed until the eggs are taken out for use.

It is recommended by some to also cover the eggs with a cloth on top of which is spread some of the sediment from the mixture, but this is unnecessary. Quite a number of eggs were opened in November, December and January, after having been thus kept for six and seven months, and none having perfect shells were spoiled. Eggs having imperfect shells will, of course, be spoiled in this solution.

It is always essential to have eggs with a clean and perfect shell, and absolutely fresh, if they are to be preserved.

SWINE.

Several feeding experiments with pigs have been made during the year. A bulletin giving most of the results obtained with coarse foods was published in April. Quite a number of feeding trials not reported, in which it was desired to observe the effect of an addition of salt to the food, are complete enough that the results can be here given.

In the one experiment only a small amount of silage and coarse forage was fed, the proportion varying from ten to sixteen per cent of the total water-free food. Two pens of pigs, as near alike as possible in age, size and previous treatment, were always fed at the same time. The pen which had salt during one period was without during the next and vice versa. The mixed grain A contained one part by weight of "Patent Process Feed" (a gluten meal) and three parts of corn meal, and the mixed grain B contained one part of "Patent Process Feed" and six parts corn meal.

Except during one short period when there was a very slight difference in favor of the ration without salt (one-tenth of one cent less cost per pound gain) the results were always considerably in favor of the ration to which a small amount of salt was added. The general results of this feeding experiment calculated to the rate per 100 pounds live weight and averaged for periods according to the slight changes of food, are found in the following table:

AVERAGE PER DAY FOR EVERY 100 POUNDS OF LIVE WEIGHT.

Period.	PIGS.	Salt.	Total mixed grain (A).	Total mixed grain (B).	Total silage.	Total comfey.	Total food.	Water.	Water-free mixed grain (A).	Water-free mixed grain (B).	Water-free silage.	Water-free comfey.	Total water-free food.	Gain in weight.	Pounds of water-free food to produce one pound gain.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
June 1 to June 22 ..	Five Duroc Jerseys, average weight during period 118.5 pounds .....	.17	1.63	.....	1.18	.....	2.86	6.79	1.49	.....	.29	.....	1.78	.57	3.12
June 1 to June 22 ..	Five Duroc Jerseys, average weight during period 121.1 pounds	0.	1.64	.....	1.15	.....	2.79	6.69	1.45	.....	.29	.....	1.74	.54	3.22
June 22 to July 13 ..	Five Duroc Jerseys, average weight during period 133.1 pounds .....	.15	1.98	.....	.....	1.05	3.03	7.27	1.54	.....	.....	.23	1.77	.54	3.28
June 22 to July 13 ..	Five Duroc Jerseys, average weight during period 135.2 pounds	0.	1.92	.....	.....	1.04	2.96	6.94	1.70	.....	.....	.23	1.83	.51	3.78
July 13 to August 3.	Five Duroc Jerseys, average weight during period 151.7 pounds .....	.20	.....	1.96	.92	.....	2.88	5.64	.....	1.75	.23	.....	1.98	.58	3.41
July 13 to August 3.	Five Duroc Jerseys, average weight during period 150.1 pounds	0.	.....	1.98	.93	.....	2.91	5.28	.....	1.77	.23	.....	2.00	.60	3.33

AVERAGE PER DAY FOR EVERY 100 POUNDS LIVE WEIGHT.

Period.	PIGS.	Salt.	Total corn meal.		Total silage.		Total barley and pea forage.		Total food.		Water.		Water-free corn meal.		Water-free silage.		Water-free barley and pea forage.		Total water-free food.		Gain in weight.		Pounds of water- free food to pro- duce one pound gain.	
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Aug. 3 to Aug. 24...	Five Duroc Jerseys, average weight during period, 168.5 pounds.....	Ozs. .24	1.95	.83	.....	.....	.....	.....	2.78	5.29	1.75	.21	.....	.....	.....	.....	.....	.....	1.96	.50	.....	.....	.....	.....
Aug. 3 to Aug. 24...	Five Duroc Jerseys, average weight during period, 168.7 pounds.....	.....	1.95	.83	.....	.....	.....	.....	2.78	4.54	1.75	.21	.....	.....	.....	.....	.....	.....	1.96	.43	.....	.....	.....	.....
Aug. 24 to Sept. 21..	Five Duroc Jerseys, average weight during period, 190.7 pounds.....	.21	1.91	.....	.73	.....	.....	.....	2.64	4.26	1.72	.....	.....	.....	.....	.....	.....	.....	1.91	.54	.....	.....	.....	.....
Aug. 24 to Sept. 21.	Five Duroc Jerseys, average weight during period, 188.4 pounds.....	.....	1.93	.....	.74	.....	.....	.....	2.67	3.67	1.73	.....	.....	.....	.....	.....	.....	.....	1.92	.42	.....	.....	.....	.....

The gain made during this experiment was a profitable one even with prices of grain somewhat higher than usual. The average cost, however, for all the periods was forty-eight cents less per 100 pounds gain with the pigs having salt.

While the results have generally favored the addition of salt to the ration when only a small proportion of the coarser foods was used, they have not tended always in the same direction when a large proportion was fed. While feeding clover, corn silage, sorghum, etc., better results have generally attended the ration to which salt has been added, but whenever mangolds have been fed the pigs having salt have generally made much poorer gains. This may perhaps be due to the fact that as a much larger amount of salt exists in mangolds than in most other foods, the salt added is enough to make an injurious quantity. Results of experiments where coarse foods were used were given in the annual report for 1890, and in bulletin No. 28. The results of several feeding trials, made in this connection, which have not been reported, are given briefly in the following tabulated form.

Other feeding trials made during the year are part of experiments not completed.

AVERAGE PER DAY FOR EACH 100 POUNDS, LIVE WEIGHT.

Period.	PIGS.	Salt.	Total linseed meal	Total manolds.	Total food.	Water.	Water-free linseed meal.	Water-free manolds.	Total water-free food.	Gain in weight.	Pounds of water-free food for one pound gain.
		Ozs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Jan. 23 to Feb. 13...	Three Cheshires, average weight during period, 141.3 pounds .....	.12	.47	9.32	9.79	5.67	.41	1.01	1.42	.16	8.87
Jan. 23 to Feb. 13...	Two Cheshires, average weight during period, 150.0 pounds .....	.....	.57	8.71	9.28	3.09	.50	.94	1.44	.37	3.89
Feb. 13 to Mar. 20...	Two Cheshires, average weight during period, 170 pounds .....	.15	.59	13.07	13.66	4.85	.52	1.41	1.93	.33	5.85
Feb. 13 to Mar. 20...	Two Cheshires, average weight during period, 167 pounds .....	.....	.60	13.30	13.90	4.20	.52	1.44	1.96	.38	5.15
Feb. 2 to Mar. 2....	Five Duroc Jerseys, average weight during period, 80 pounds.....	.12	.41	16.25	16.66	.69	.36	1.75	2.11	.58	3.64
Feb. 2 to Mar. 2....	Five Duroc Jerseys, average weight during period, 80.4 pounds.....	.....	.41	16.16	16.57	.92	.36	1.74	2.10	.53	3.96
Mar. 2 to Mar. 23 ...	Five Duroc Jerseys, average weight during period, 90 pounds .....	.11	.65	16.30	16.95	.77	.57	1.76	2.33	.36	6.47
Mar. 2 to Mar. 23 ...	Five Duroc Jerseys, average weight during period, 92 pounds.....	.....	.64	15.84	16.48	1.12	.56	1.71	2.27	.58	3.91

AVERAGE PER DAY FOR EACH 100 POUNDS, LIVE WEIGHT.

Period.	PIGS.	Salt.	Total linseed meal.	Total gluten feed.	Total corn silage.	Total food.	Water.	Water-free linseed meal.	Water-free gluten feed.	Water-free corn silage.	Total water-free food.	Gain in weight.	Pounds of water-free food for one pound gain in weight.
		Ozs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
March 30 to April 20	Five Duroc Jerseys, average weight during period, 98.4 pounds .....	.10	.37	.....	7.66	8.03	3.26	.32	.....	1.52	1.84	.25	7.36
March 30 to April 20	Five Duroc Jerseys, average weight during period, 94 pounds .....	.....	.40	.....	8.02	8.42	2.78	.35	.....	1.60	1.95	.18	10.83
April 20 to May 25	Five Duroc Jerseys, average weight during period, 108 pounds .....	.10	.....	.71	9.16	9.87	4.56	.....	.64	1.82	2.46	.37	6.65
April 20 to May 25	Five Duroc Jerseys, average weight during period, 103.6 pounds .....	.....	.....	.74	9.55	10.29	3.55	.....	.66	1.90	2.56	.43	5.95

SORGHUM.

Sixteen varieties of sorghum were grown in 1891. Ten of them were from seed selected from individual canes in 1890, and four other varieties from seed received from the Department of Agriculture, Washington.

The unusually dry weather early in the summer delayed the sprouting of the seed several weeks and several varieties that generally ripen early failed to mature before frost. The average of observations on several rows of each variety will be found in the following table. The average height given does not include the panicle. The average weight is that of the stripped cane. It is not possible to estimate any yield of seed on account of English sparrows. No. 35 is valuable for seed alone, and the only varieties recommended for syrup in New York State are Nos. 6, 8, 9, 10, 11 and 72, but for forage any of the varieties on the list could be successfully grown.

OBSERVATIONS ON VARIETIES OF SORGHUM GROWN IN 1891.

Row number.	NAME OF VARIETY, ETC.	Seed planted.	MATURITY.			Average height.	Average diameter.	Average weight.
			Panicle first appeared.	Panicle in bloom.	Seed ripe.			
3.....	Sport from White African, 1890 seed.....	May 9	August 21	September 2	October 10	8.4	1.0	19.4
6.....	Black Sorghum.....	May 9	August 21	September 2	October 12	7.9	.8	19.5
7.....	Undenabule.....	May 9	August 14	September 24	.....	9.4	1.0	24.0
8.....	Jyangentombi (not true), 1890 seed.....	May 9	August 26	September 9	October.....	9.6	.9	23.9
9.....	Boombana or Early Amber, 1890.....	May 9	August 12	August 27	October 4	7.4	.6	16.6
10.....	Koombana, 1890 seed.....	May 9	August 17	August 28	October 7	7.5	.7	17.2
11.....	Pootung Sorghum, 1890 seed.....	May 9	August 20	September 2	October 9	8.5	1.0	24.3
20.....	Ubeliana, 1890 seed.....	May 9	September 25	August 7	.....	8.3	1.0	30.2
72.....	Early variety from S. H. Kenney, 1890 seed.....	May 9	August 14	August 30	October.....	7.7	.7	15.4
9, mixed	Early Amber, 1890.....	May 9	August 28	August 27	October 3	7.9	.6	16.6
Sport 20.....	Sport from Unbehiana, 1890.....	May 9	August 25	August 20	.....	13.4	1.1	27.0
21.....	"D. of A. Early Orange (Sugar, 16.07)".....	May 9	September 13	September 26	.....	7.7	1.3	40.2
23.....	"Folger's Early D. of A. (Sugar, 17.50)".....	May 9	August 29	September 10	.....	8.8	.8	22.0
24.....	"Amber D. of A. (Sugar, 16.00)".....	May 9	August 22	September 20	.....	8.7	.9	24.7
25.....	"Coleman Cane, D. of A. (Sugar, 15.40)".....	May 9	August 9	September 26	.....	7.2	1.1	31.1
27.....	Undenabule, No. 1 (Sugar, 17.70)".....	May 9	September 20	September 27	.....	9.1	1.1	30.5
28.....	Links Hybrid, D. of A. (Sugar, 15.15)".....	May 9	.....	September 18	.....	9.3	1.1	31.5
30.....	Sorghum Ruber" (from Java).....	May 9	September 1	August 9	.....	6.8	.9	13.5
35.....	"Jerusalem Corn".....	May 13	August 9	August 22	September 27	4.6	.6	.....

In 1890 sorghum grown on strips of land that had been top-dressed with carbonate of lime averaged considerably higher in content of sugar than that from land not so treated. As only forty canes were analyzed in the experiment of that season, the work was repeated this year on a somewhat larger scale. Four plats, A, B, C and D, were planted, each with the same number of varieties in rows, and plats A and C received an application of crude precipitated carbonate of lime at the rate of 6,000 pounds per acre, B and D being left blank. No differences of any consequence in yield or maturity were noticeable. In the fall partial analyses were made of the juices from ninety-four individual canes from these plats, one-half from the limed plats and the other half of like maturity and of the same varieties from the blank plats. The average of all the determinations from plats A and C was: Specific gravity of juice, 1.0593, and cane sugar 9.36 per cent; and from plats B and D: Specific gravity, 1.0592; cane sugar, 9.39 per cent. From these results it is quite plain that for this season at least there was no advantage in favor of an application of carbonate of lime. It may be that on a heavier clay soil an application of carbonate of lime will show more benefit, but on such a soil it is not recommended to grow sorghum except for forage.

The variations of juices from canes of the several varieties will be found in the following table:

JUICES OF SORGHUMS, 1891.

Row No.	NAME OF VARIETY, ETC.	Date of analysis.	Weight of cane. Ounces.	Per cent of juice obtained.	Sp. gr. of juice.	Per cent of sugar by polarization.	Maturity of seed.
3	Sport from White African, 1890 seed	October 13	17.5	62.9	1.044	5.91	Ripe seed.
3	Sport from White African, 1890 seed	October 13	16.3	65.2	1.040	4.58	Ripe seed.
3	Sport from White African, 1890 seed	October 13	16.8	65.4	1.035	2.84	Ripe seed.
3	Sport from White African, 1890 seed	October 13	20.8	67.5	1.048	6.52	In hard dough.
3	Sport from White African, 1890 seed	October 15	18.0	66.3	1.038	3.89	Ripe seed.
3	Sport from White African, 1890 seed	October 15	17.8	65.4	1.048	6.78	Ripe seed.
3	Sport from White African, 1890 seed	October 15	19.0	64.6	1.042	4.94	Ripe seed.
3	Sport from White African, 1890 seed	October 15	18.0	67.7	1.046	6.60	Ripe seed.
3	Sport from White African, 1890 seed	October 13	17.3	73.6	1.054	9.27	In soft dough.
6	Black sorghum variety, bicolor, 1890 seed	October 13	17.0	70.6	1.061	10.51	Ripe seed.
6	Black sorghum variety, bicolor, 1890 seed	October 13	19.3	67.5	1.046	7.09	Ripe seed.
6	Black sorghum variety, bicolor, 1890 seed	October 13	19.0	73.7	1.059	10.18	In hard dough.
6	Black sorghum variety, bicolor, 1890 seed	October 16	12.3	57.1	1.023	1.28	Ripe seed.
6	Black sorghum variety, bicolor, 1890 seed	October 16	18.8	70.7	1.054	8.50	Ripe seed.
6	Black sorghum variety, bicolor, 1890 seed	October 16	21.0	68.1	1.064	11.10	Ripe seed.
6	Black sorghum variety, bicolor, 1890 seed	October 16	22.8	68.1	1.057	9.88	Ripe seed.
6	Black sorghum variety, bicolor, 1890 seed	October 16	22.5	65.6	1.061	10.62	Ripe seed.
6	Black sorghum variety, bicolor, 1890 seed	October 23	21.3	65.7	1.060	10.12	Ripe seed.
6	Black sorghum variety, bicolor, 1890 seed	October 23	18.8	62.4	1.064	10.78	Ripe seed.
6	Black sorghum variety, bicolor, 1890 seed	October 23	23.8	71.6	1.034	3.26	Ripe seed.
6	Black sorghum variety, bicolor, 1890 seed	October 23	17.0	68.8	1.032	3.63	Ripe seed.
6	Black sorghum variety, bicolor, 1890 seed	October 24	18.5	67.5	1.050	7.36	Ripe seed.
6	Black sorghum variety, bicolor, 1890 seed	October 24	17.8	67.6	1.035	4.02	Ripe seed.
6	Black sorghum variety, bicolor, 1890 seed	October 24	19.0	70.8	1.053	7.91	Ripe seed.

JUICES OF SORGHUMS, 1891 — (Continued).

Row No.	NAME OF VARIETY, ETC.	Date of analysis.	Weight of cane. Ounces.	Per cent of juice obtained.	Sp. gr. of juice.	Per cent of sugar by polarization.	Maturity of seed.
7	Undendebule, 1890 seed.....	October 14	21.5	71.4	1.071	13.03	In soft dough.
7	Undendebule, 1890 seed.....	October 14	36.3	68.8	1.073	12.69	In soft dough.
7	Undendebule, 1890 seed.....	October 14	33.0	62.9	1.072	12.95	In soft dough.
7	Undendebule, 1890 seed.....	October 14	37.8	64.9	1.058	10.35	In soft dough.
8	"Jyagentombi" (not true), 1890 seed....	October 14	24.5	55.6	1.074	13.12	Ripe seed.
8	"Jyagentombi" (not true), 1890 seed....	October 14	31.0	57.3	1.067	11.18	Ripe seed.
8	"Jyagentombi" (not true), 1890 seed....	October 14	22.8	59.1	1.068	12.24	Ripe seed.
8	"Jyagentombi" (not true), 1890 seed....	October 14	24.0	55.2	1.072	12.95	Ripe seed.
8	"Jyagentombi" (not true), 1890 seed....	October 16	26.0	55.8	1.064	9.31	Ripe seed.
8	"Jyagentombi" (not true), 1890 seed....	October 16	25.0	68.0	1.066	10.71	Ripe seed.
8	"Jyagentombi" (not true), 1890 seed....	October 16	24.5	52.0	1.075	12.66	Ripe seed.
8	"Jyagentombi" (not true), 1890 seed....	October 16	26.3	58.5	1.072	12.36	Ripe seed.
8	"Jyagentombi" (not true), 1890 seed....	October 26	41.5	63.9	1.063	11.53	Ripe seed.
8	Odd from above (not true), 1890 seed....	October 26	40.8	64.5	1.069	11.30	Ripe seed.
9	Boomvana or Early Amber, 1890 seed....	October 14	19.0	73.4	1.065	11.41	Ripe seed.
9	Boomvana or Early Amber, 1890 seed....	October 14	19.8	70.9	1.069	12.27	Ripe seed.
9	Boomvana or Early Amber, 1890 seed....	October 14	17.8	70.4	1.063	10.47	Ripe seed.
9	Boomvana or Early Amber, 1890 seed....	October 14	20.3	70.1	1.071	12.95	Ripe seed.
9	Boomvana or Early Amber, 1890 seed....	October 16	20.0	70.3	1.071	12.56	Ripe seed.
9	Boomvana or Early Amber, 1890 seed....	October 16	18.0	71.1	1.069	12.24	Ripe seed.
9	Boomvana or Early Amber, 1890 seed....	October 16	18.0	72.0	1.071	12.07	Ripe seed.
9	Boomvana or Early Amber, 1890 seed....	October 16	20.3	70.4	1.070	12.42	Ripe seed.
9	Boomvana or Early Amber, 1890 seed....	October 23	20.3	66.0	1.069	11.90	Ripe seed.
9	Boomvana or Early Amber, 1890 seed....	October 23	20.3	66.5	1.072	13.30	Ripe seed.

9	Boombvana or Early Amber, 1890 seed....	October 23	19.5	64.1	1.074	13.33	Ripe seed.
9	Boombvana or Early Amber, 1890 seed....	October 23	18.0	63.9	1.071	12.98	Ripe seed.
9	Boombvana or Early Amber, 1890 seed....	October 24	18.5	67.3	1.072	12.63	Ripe seed.
9	Boombvana or Early Amber, 1890 seed....	October 24	18.5	70.3	1.059	10.09	Ripe seed.
9	Boombvana or Early Amber, 1890 seed....	October 24	18.0	70.0	1.065	10.92	Ripe seed.
9	Boombvana or Early Amber, 1890 seed....	October 24	15.5	75.8	1.064	11.04	Ripe seed.
9	Mixed seed from several canes of 1890						
9	Early Amber.....	October 26	16.5	64.2	1.066	11.13	Ripe seed.
9	Mixed seed from several canes of 1890						
9	Early Amber.....	October 26	16.0	63.7	1.075	13.12	Ripe seed.
9	Mixed seed from several canes of 1890						
9	Early Amber.....	October 26	19.3	69.4	1.068	11.53	Ripe seed.
9	Mixed seed from several canes of 1890						
9	Early Amber.....	October 26	18.5	67.3	1.068	11.80	Ripe seed.
9	Mixed seed from several canes of 1890						
9	Early Amber.....	October 27	15.8	64.1	1.060	10.15	Ripe seed.
9	Mixed seed from several canes of 1890						
9	Early Amber.....	October 27	19.5	67.6	1.067	11.90	Ripe seed.
9	Mixed seed from several canes of 1890						
9	Early Amber.....	October 27	18.0	65.3	1.062	10.21	Ripe seed.
9	Mixed seed from several canes of 1890						
9	Early Amber.....	October 27	16.3	64.6	1.061	10.12	Ripe seed.
10	Koombana, 1890 seed.....	October 15	16.5	63.6	1.053	6.81	Ripe seed.
10	Koombana, 1890 seed.....	October 15	15.5	64.2	1.049	5.16	Ripe seed.
10	Koombana, 1890 seed.....	October 15	14.5	65.2	1.051	6.41	Ripe seed.
10	Koombana, 1890 seed.....	October 15	15.0	63.3	1.045	4.97	Ripe seed.
10	Koombana, 1890 seed.....	October 22	15.5	60.3	1.062	9.77	Ripe seed.
10	Koombana, 1890 seed.....	October 22	13.3	62.6	1.063	10.15	Ripe seed.
10	Koombana, 1890 seed.....	October 22	14.3	67.5	1.063	9.77	Ripe seed.
10	Koombana, 1890 seed.....	October 22	17.8	65.3	1.050	7.61	Ripe seed.

JUICES OF SORGHUMS, 1891—(Concluded).

Row No.	NAME OF VARIETY, ETC.	Date of analysis	Weight of cane. Ounces.	Per cent of juice obtained.	Sp. gr. of juice.	Per cent of sugar by polarization.	Maturity of seed.
10	Koombana, 1890 seed.....	October 23	13.3	63.2	1.057	8.20	Ripe seed.
10	Koombana, 1890 seed.....	October 23	13.8	64.5	1.049	6.11	Ripe seed.
10	Koombana, 1890 seed.....	October 23	11.5	62.8	1.053	6.52	Ripe seed.
10	Koombana, 1890 seed.....	October 23	11.7	67.9	1.045	5.41	Ripe seed.
10	Koombana, 1890 seed.....	October 15	27.5	69.8	1.054	9.28	Ripe seed.
11	Pootung sorghum, 1890 seed.....	October 15	23.3	68.8	1.049	7.36	Ripe seed.
11	Pootung sorghum, 1890 seed.....	October 15	23.0	69.6	1.053	7.55	Ripe seed.
11	Pootung sorghum, 1890 seed.....	October 15	27.0	69.8	1.065	10.24	Ripe seed.
11	Pootung sorghum, 1890 seed.....	October 22	28.5	69.1	1.048	6.95	Ripe seed.
11	Pootung sorghum, 1890 seed.....	October 22	27.5	68.6	1.056	7.93	Ripe seed.
11	Pootung sorghum, 1890 seed.....	October 22	25.8	66.2	1.056	9.28	Ripe seed.
11	Pootung sorghum, 1890 seed.....	October 22	24.3	66.0	1.054	8.84	Ripe seed.
11	Pootung sorghum, 1890 seed.....	October 22	42.0	72.3	1.055	6.18	In bloom.
20	Uehlana, 1890 seed.....	October 15	34.8	72.2	1.042	3.29	In bloom.
20	Uehlana, 1890 seed.....	October 15	41.8	69.0	1.058	7.36	In bloom.
20	Uehlana, 1890 seed.....	October 15	46.5	70.5	1.059	6.78	In bloom.
20	Uehlana, 1890 seed.....	October 15	32.5	69.5	1.047	3.35	In bloom.
20	Uehlana, 1890 seed.....	October 23	44.3	72.2	1.058	7.30	In bloom.
20	Uehlana, 1890 seed.....	October 23	35.0	74.3	1.055	6.00	In bloom.
20	Uehlana, 1890 seed.....	October 23	43.3	72.5	1.064	8.78	In bloom.
20	Uehlana, 1890 seed.....	October 23	23.3	54.8	1.044	5.21	Ripe seed.
20	Sport from No. 20.....	October 13	26.8	52.2	1.048	6.21	Ripe seed.
20	Sport from No. 20.....	October 13	33.0	58.2	1.060	9.40	In soft dough.
20	Sport from No. 20.....	October 13	37.0	58.1	1.064	10.41	In soft dough.

21	Odd cane from 20 sport.....	October 26	27.5	69.1	1.055	8.87	Ripe seed.
72	Odd cane from 20 sport.....	October 26	27.5	68.0	1.060	9.85	Ripe seed.
72	Odd cane from 20	October 26	28.5	66.7	1.045	5.16	Soft dough.
72	"Early Orange" (D. of A.).....	October 26	31.5	69.5	1.055	8.09	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 15	22.0	66.0	1.058	9.17	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 15	21.0	66.4	1.051	7.64	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 15	21.3	68.8	1.061	9.17	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 15	16.0	67.2	1.060	9.37	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 23	21.3	68.7	1.066	10.30	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 23	21.3	70.4	1.058	8.90	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 23	24.0	68.1	1.060	9.40	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 23	21.0	67.1	1.061	9.85	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 24	20.5	68.3	1.067	12.10	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 24	23.0	68.3	1.060	9.91	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 24	19.5	75.6	1.061	9.70	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 24	18.5	68.8	1.057	9.31	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 26	21.8	69.4	1.046	5.79	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 26	20.0	66.0	1.059	8.81	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 26	19.0	67.1	1.060	9.53	Ripe seed.
72	Early variety, from S. H. Kenny, 1890 seed	October 26	18.3	66.8	1.060	9.04	Ripe seed.

REPORT OF THE CHEMIST.*

The present annual report covers the period extending from December 1, 1890, to December 1, 1891. The following statement indicates, in outline, the various subjects considered :

- I. Summary of laboratory work.
- II. Arrangement of chemical work.
- III. Bulletins and addresses.
- IV. Experiments in the manufacture of cheese.
- V. Loss of milk constituents in cheese-making.
- VI. Influence of composition of milk on composition of cheese.
- VII. Influence of composition of milk on yield of cheese.
- VIII. Comparison of Cheddar and stirred-curd processes of manufacture.
- IX. Comparison of commercial and home-made rennet-extract.
- X. Changes taking place in the ripening of cheese.
- XI. Lines of work in future investigations of cheese.
- XII. Results of investigation of cheese applied to practical dairy problems.
- XIII. General summary of results of investigation of cheese.
- XIV. Comparison of dairy breeds of cattle with reference to production of butter.
- XV. Comparison of dairy breeds of cattle with reference to production of cheese.
- XVI. The influence of advancing lactation upon the production of butter.
- XVII. The influence of advancing lactation upon the production of cheese.
- XVIII. How to ascertain the butter-making efficiency of milk-fat.
- XIX. Comparison of methods of creaming milk by setting and by centrifugal machine.
- XX. Analyses of materials used in spraying plants.

* I. L. Van Slyke, Ph. D.

- XXI. Analyses of sprayed grapes.
- XXII. Explanation of terms of chemical analysis in relation to fertilizers.
- XXIII. Method of making commercial valuations of fertilizers.
- XXIV. Tabulated statement of fertilizing composition and valuation of various products.
- XXV. Tabulated results of analyses of commercial fertilizers in New York State for the fall of 1890.
- XXVI. Tabulated results of analyses of commercial fertilizers in New York State for the spring of 1891.

I. SUMMARY OF LABORATORY WORK.

While a statement of the number of determinations of different kinds does not include an account of all kinds of laboratory work and does not, therefore, necessarily convey an accurate idea in regard to the whole amount of laboratory work done, nevertheless, it serves to give fairly adequate information in regard to the extent, character and variety of the chemical and allied work. It will be noticed that our chemical work has been mainly confined to two lines, investigations connected with dairy problems and analysis of fertilizers. When we have become satisfactorily settled in the new chemical laboratory we shall be able to accomplish a large amount of work without increased effort.

II. ARRANGEMENT OF CHEMICAL WORK.

The chemist gives such general and special supervision to all the different lines of work as they may require. The chemical work connected with the investigation of cheese, with the analysis of fungicides, and with a portion of the miscellaneous work, has been mainly done by the chemist personally. The work done in the way of preparing bulletins and giving addresses is given below under a special head.

The present arrangement of chemical work among the assistant chemists is as follows :

Mr. C. G. Jenter has special charge of the analysis of butter, of most of the cattle foods and similar substances and of certain special and miscellaneous analytical work.

Mr. A. L. Knisely has special charge of the analysis of milk, of microscopical examinations of milk, and also assists in the analysis of cattle foods, etc.

Mr. S. Ando assists in the analysis of milk, skim-milk, etc., in the determinations of nitrogen and in general laboratory work.

Mr. W. H. Andrews and Mr. B. L. Murray give their entire time to the analysis of commercial fertilizers and fertilizing materials.

In connection with the investigation of comparing dairy breeds of cattle, Mr. A. H. Horton has charge of the numerous calculations and records connected with the butter work and milk work ; and Mr. R. D. Newton, among other duties, has charge of the calculations and records connected with the food eaten, milk yield and the general stable record. The details of the practical dairy work are in charge of Mr. I. Phillips.

III. BULLETINS AND ADDRESSES.

During the year the chemist has prepared the following station bulletins :

Bulletin No. 26—New Series—January, 1891. (25 pages.) Outline of the history of commercial fertilizers. General principles underlying the use of fertilizers. Results of analyses of commercial fertilizers.

Bulletin No. 27—New Series—February, 1891. (20 pages.) General principles underlying the use of fertilizers. Results of analyses of commercial fertilizers.

Bulletin No. 32—New Series—June, 1891. (30 pages.) Description of materials used in making commercial fertilizers. Fertilizing materials produced on farms. Fertilizing composition and valuation of various products. Results of analyses of commercial fertilizers.

Bulletin No. 33—New Series—July, 1891. (20 pages.) Explanation of terms of chemical analysis. Commercial valuations of fertilizers. Composition of various chemical compounds. Results of analyses of commercial fertilizers.

Bulletin No. 34—New Series—August, 1891. (46 pages.) Comparison of dairy breeds of cattle with reference to production of butter.

Bulletin No. 37—New Series—November, 1891. (70 pages.) Investigation of cheese. Experiments in the manufacture of cheese. Influence of composition of milk on composition and yield of cheese. A study of the process of ripening of cheese.

During the year the chemist has given the following addresses:

"Chemistry of Dairy Products," in December, 1890, at Walton, N. Y., before the annual convention of the New York State Dairymen's Association.

"Fruits from a Chemist's Standpoint," in January, 1891, at Rochester, before the annual convention of the Western New York Horticultural Society.

"Commercial Fertilizers," in February, March and April, at farmers' institutes, held in the following places: Geneva, Ontario county; Norwich, Chenango county; Cortland, Cortland county; Owego, Tioga county; Horseheads, Chemung county; Fayetteville, Onondaga county.

In August and September, 1891, a course of lectures before the dairy school held at Geneva by the New York State Dairymen's Association on the following subjects: "The Chemistry of Milk, Cream, Skim-milk, Buttermilk and Butter;" "The Physical Properties of Milk;" "Bacteria in Relation to Milk, Cream and Butter;" "Some Dairy Whys, or Science Applied to Dairy Methods;" "Methods of Testing Milk for Fat."

EXPERIMENTS IN THE MANUFACTURE OF CHEESE.

OBJECTS OF INVESTIGATION.

For some time past it has been the purpose of the Station to enter upon a series of investigations relating to the manufacture of cheese. At the suggestion of the director, the Station chemist

began the first of this proposed series of investigations in September, 1891. Six lots of cheese were made in September and, two more in October.

The general object of these experiments is to make a study of the various conditions that affect the composition and quality of cheese.

The special objects of this first investigation were to ascertain —

First. How much fat can be readily worked into cheese ;

Second. What influence varying amounts of fat in milk have upon the amount of fat and of nitrogen compounds that can be recovered in cheese ;

Third. Whether there is any better recovery of fat or of nitrogen compounds in the stirred-curd process of manufacture than in the Cheddar process ;

Fourth. Whether there is any difference in the use of commercial rennet-extract and of home-made rennet-extract ;

Fifth. What general changes in composition take place in the ripening or curing of cheese.

While, in most respects, fairly definite results were obtained, it must be kept in mind that the experiments, so far, are few in number and can scarcely justify any broad conclusions. The results of this first series of experiments should be looked upon mainly as valuable suggestions for future work ; and if the results of several series of investigations, made under varying conditions, agree, then we may be able to state definite general conclusions, which may be regarded as established facts.

In this connection, it should be stated that the Station is indebted to the kindly co-operation of the New York State Dairy Commissioner, Mr. J. K. Brown, who detailed the well-known experts in cheese-making, Mr. G. A. Smith and Mr. W. W. Hall, to manufacture the cheese for the experiments. Mr. Hall worked with Mr. Smith in the four experiments dating from September seventeenth to September twenty-first, inclusive. In the other experiments the cheese-making was done by Mr. Smith alone. Thus, the first requirement necessary to the success of the experiment, skill in making the cheese, was secured.

COMPOSITION OF MILK AND CHEESE.

In order that the analyses of milk, whey and cheese, contained in this report, may be intelligible to cheese-makers and to others.

who do not chance to be acquainted with the composition of milk, cheese, etc., it is desirable to present some of the main facts in this connection.

The following outline gives the names of the constituents found in milk and its derived products, as they are usually reported in analysis :

I. Water.

II. Total solids.

1. Fat.

2. Solids not fat.

(1.) Nitrogen compounds (casein, albumen, etc.).

(2.) Sugar.

(3.) Ash.

1. *Water and total solids.*—The compounds contained in milk, cheese, etc., can be divided into two general classes. The first class includes the single compound, *water*. The second class includes the *total solids*, by which we mean all the compounds except water. The amount of total solids is found by evaporating the water, the portion left after evaporation being the total solids. The amount of water and total solids in milk varies considerably according to the breed of cow, period of lactation, food, etc. The amount of water in milk may vary from eighty to ninety pounds per hundred, the average in normal milk being about eighty-seven pounds per hundred. The amount of total solids may vary from ten to twenty pounds per hundred. The average being not far from thirteen pounds per hundred.

The total solids are usually divided into two classes, (1st) *fat*, and (2d) *solids not fat*.

2. *The fat* of milk, butter, cheese, etc., consists of a mixture of several compounds, each of which contains glycerine united with some acid. The more important of these compounds, contained in the fat of milk, cheese, butter, etc., are the following :

(1) *Olein* (glycerine united with oleic acid),

(2) *Palmitin* (glycerine united with palmitic acid),

(3) *Stearin* (glycerine united with stearic acid),

(4) *Butyrin* (glycerine united with butyric acid).

A large proportion of olein or of butyrin in a fat makes a soft or easily melting fat, while a large proportion of palmitin or

stearin makes a hard fat. The amount of fat in milk may vary from two to ten pounds per hundred of milk, the average amount being not far from 3.5 pounds per hundred. Butter contains from eighty to eighty-five pounds of fat per hundred, while cheese may contain all the way from three pounds of fat per hundred pounds of cheese, as in skim-cheese, to sixty pounds per hundred, as in cream-cheese. The average amount of fat in cheese made from normal milk averages thirty pounds or more per hundred.

3. *The solids not fat* in milk, cheese, etc., include all the solids except the fat, and these are (1st) the *nitrogen compounds*, chief of which are *casein* and *albumen*; (2d) *milk sugar*, and (3d) *ash*.

(1) *Casein* and *albumen* are known as nitrogen and nitrogenous compounds, because they contain, in addition to other elements the element nitrogen, which the other compounds of milk do not contain. These nitrogen compounds are often called also albuminoids, because they closely resemble in composition the albumen or white of an egg. They are sometimes called proteids also,

The two principal nitrogen compounds or albuminoids in milk are *casein* and *albumen* and these compounds are the only ones we shall notice in this connection. Casein and albumen are of more especial interest to the cheese-maker than any other constituents in the milk. Of these two compounds, the casein is the more important. Casein and albumen differ in their chemical properties in two important respects :

(1st) Albumen is not coagulated or solidified by acids or by action or rennet, while casein is coagulated.

(2d) Albumen is coagulated by heat, while casein is not. These properties of casein and albumen have a practical bearing upon cheese-making, since by the action of rennet we can coagulate the casein and retain it in the curd, while the albumen passes into the whey more or less completely and is lost to the cheese. The amount of casein and albumen together in normal milk may vary from below three to over four pounds per hundred, the average amount being a little short of 3.5 pounds per hundred.

(2) *Milk Sugar* has essentially the same composition as ordinary cane sugar, but the former is less soluble and less sweet than the latter. Milk sugar is acted upon by certain micro-organisms,

or minute germs, or, as we commonly say, it ferments, forming, as one of its chief products, lactic acid, the characteristic acid of sour milk. The sugar, in the process of cheese-making, passes mostly into the whey. In some few places, the milk sugar is obtained from the whey and converted into an article of commerce, for which there is a limited demand, but, in most cases, no attempt is made to recover it. The amount of sugar in milk averages not far from five pounds per hundred.

(3) The *Ash* in milk consists of what is left after milk is burned as completely as possible. It contains compounds made up of such elements as calcium, phosphorus, potassium, sodium, magnesium, oxygen, sulphur, chlorine, iron, etc. A large part of the ash-constituents is lost in the whey. The average amount of ash in milk is about three-fourths of one pound per hundred pounds of milk. The calcium (or lime) compounds in milk are of especial importance in connection with the process of cheese-making, since it has been recently shown that rennet will not coagulate the casein of milk unless some *soluble calcium compound* is present, though it is not clearly understood in exactly what way the calcium compounds influence the action of rennet.

The following table will give a fair idea of the average composition of normal milk :

	Pounds per hundred.
Water	87.2
Total solids	12.8
Fat	3.8
Solids not fat	9.0
Casein and albumen	3.3
Sugar	5.0
Ash	0.7

ACTION OF RENNET UPON THE CASEIN OF MILK.

The action of rennet in coagulating the casein of milk is due to a chemical ferment contained in the rennet. This ferment, when introduced into milk, acts at certain temperatures with great rapidity, and produces marked changes, chief among which is the coagulation or solidification of the casein. The exact chemical changes produced in casein by its coagulation are not satisfactorily

understood. The formation of lactic acid in cheese-making is doubtless produced by the lactic acid bacteria and not by the rennet-ferment.

PROCESS OF MANUFACTURING CHEESE.

General outline. The process of manufacturing cheese is, in brief outline, as follows: The casein of the milk is coagulated by the action of rennet. The coagulated casein or curd, which is at first soft and full of moisture, is cut into small pieces and allowed to stand at a certain temperature until the curd becomes tough and less moist. The whey is then removed, and the curd, after draining sufficiently, is mixed with salt, then put into molds and subjected to a gradual pressure. After being in press several hours the cheese is placed in a room of even, moderate temperature, when it undergoes certain changes, acquiring, in time, the flavor and other well-known properties of cheese.

The general principle underlying the manufacture of cheese depends, primarily, upon the action of rennet on milk. While the theory of cheese-making depends upon this easily stated principle, and while the actual process might, from the foregoing outline, appear extremely simple, the manufacture of cheese is, in reality, a complicated process in its details, and requires, for highest success, rare skill and trained judgment. In order to present some of the difficulties encountered in cheese-making, we will consider the process more in detail.

SOME DETAILS OF CHEESE-MAKING.

(1.) *Treatment of milk before adding the rennet.*—In making cheese, the milk is gradually heated to a temperature of about 85° F., a slightly higher or lower temperature being used according to the judgment of the maker, as peculiar conditions may demand. The heating of the milk is accompanied by careful stirring, in order to enable the milk to heat uniformly and also to keep the fat evenly distributed through the milk. The milk is held at about 85° F. until a very slight amount of acid has been developed, usually known as “*ripening*,” this ripening may be hastened by the addition of a small quantity of sour milk. In the experiments described in this report, John Boyd’s “starter” was used. The exact degree of ripeness is difficult to deter-

mine, but the skilled cheese-maker appears to acquire a sort of intuition, as a result of long training in close observation, which enables him to tell the proper point. The object of ripening the milk before adding the rennet is probably to render the action of the rennet more rapid. Doubtless, ripening has some other influence, the bacteria thus added in the form of a "starter" tending to develop more quickly in the cheese a higher flavor, as in the case of ripening cream for making butter. In reality, we do not yet understand at all satisfactorily exactly what influence the ripening of milk has upon the process of cheese-making or upon the finished product.

(2) *Addition of rennet.*—When the milk has been held at about 85° F. until properly ripened, a solution prepared from rennet is added in certain proportions according to the quantity of milk used. The action of the rennet is, as previously stated, to solidify or coagulate the casein of the milk. In solidifying, the casein of the milk entangles and holds fast, mechanically, a large proportion of the fat of the milk, and, also, more or less of the ash and sugar of the milk. The rennet may cause the milk, if properly ripened, to coagulate in ten to twenty minutes; while, if added to milk that has not been ripened, the rennet may not cause proper thickening of the milk short of two hours.

(3.) *Cutting the curd.*—Again the trained judgment of the cheese-maker must be called into action in order to determine when the curd is firm enough to cut and yet not too firm. In the experiments described in this report, the milk thickened enough for cutting in about fifteen or twenty minutes after the rennet was added. For cutting curd, knives containing several blades, about half an inch apart, are used. The curd, when cut, is left in small cubes, each not more than half an inch in diameter.

The main loss of fat probably takes place in the process of cutting and of handling immediately following. The fat globules on the exposed surfaces of each small piece of curd are easily detached, and hence in cutting and in subsequent handling any undue mangling or violence increases the amount of fat lost.

(4.) *Stirring and heating the curd.*—As soon as the curd is completely cut, it is stirred very gently for ten or fifteen minutes, until the outside of the pieces of curd show the appearance of a slight film and the whey commences to separate freely from the

curd. The curd is then heated gradually to a temperature of about 98° F. The rapidity of heating and the extent of heating are points which the judgment of the maker must determine. During the heating, the curd is kept in constant but gentle agitation. This heating causes each piece of curd to shrink and expel moisture, whereby it becomes more firm and dry. In regard to the details of this shrinking and drying action, much remains to be learned, but it is probably due to the combined action of heat, of rennet, and of lactic acid. After the temperature has reached about 98° F., the heating is discontinued and the curd is stirred only at intervals sufficient to prevent its packing on the bottom of the vat. When the curd has become sufficiently firm and dry, it is allowed to settle and the whey is drawn off. To tell exactly when is the proper time to draw the whey from the curd requires the very best judgment of the maker, for this is one of the most critical points in the manufacturing process. Here, cultivated sense of smell, touch, taste and sight is needed. The most common test used to determine the proper time to draw off the whey is known as the iron-test. A portion of curd is squeezed in the hand, then placed against a hot iron, and carefully drawn away from the iron. If the curd sticks to the iron and is drawn out in little threads, about one-fourth of an inch long, the whey is generally ready to be drawn; if the threads are shorter, the action is continued until a satisfactory test is obtained. This test is supposed by the cheese-maker to indicate the amount of lactic acid present. That it is a rough test for the relative amount of acid present, our experiments showed conclusively. The curd acquires the property of being drawn out into threads, probably by action of rennet rather than of acid. It is stated that in milk coagulated by acid alone the curd does not acquire the property of being drawn into threads.

After the whey is drawn from the curd, the process of manufacture may be varied, one method of treatment making what is known as a *stirred-curd* cheese, and the other method a *Cheddar* cheese. We will briefly describe each of these processes.

(5.) *Stirred-curd cheese*.—After the whey has been drained from the curd, the curd is stirred and kept broken up so as to prevent packing. It is kept at a certain temperature, until certain signs

indicate to the maker that the curd is ready for the press. The curd is then mixed with salt and put into a mold or hoop and subjected to pressure for at least twelve hours before being removed from the hoop.

(6.) *Cheddar cheese*.—After the whey has been drained from the curd, the curd is packed on opposite sides of the vat, leaving a space in the center to enable the whey to drain off more readily. After a time the curd becomes packed or matted and is cut into pieces of such size as may be convenient to handle. These pieces are turned over from time to time to allow the whey to drain more quickly. When the curd has become pretty well freed from whey, the pieces are doubled, and the process of doubling is continued at short intervals until the whole forms a compact pile. It is then held at a certain temperature until it assumes a certain condition, which the eye and touch of the maker can detect. The curd is then torn up, spread out and cooled to about 85° F. It is then run through a curd mill, which is a knife made so as to cut the curd into square strips, half an inch in diameter. After being cut completely, the curd is salted and put to press.

CHEESE-MAKING AND SCIENCE.

From the preceding description of some of the difficulties of cheese-making, it will be readily seen that there is abundant opportunity for purely scientific study. We do not understand the reasons for many of the steps in the process. Exactly what influences ripening of milk has upon the action of rennet, and upon the manufactured product, we can not say definitely; much less can we say how the results, whatever they may be, are accomplished. We are not entirely certain that we know the exact composition of the casein of milk, and we are quite certain that we do not know satisfactorily what particular changes the action of rennet produces in the composition of casein. We do not know what changes the casein undergoes as the process continues and the curd becomes harder. The cheese-maker depends upon certain signs or indications to tell him when to cut the curd, when to draw the whey from the curd and when to put the curd to press. The reasons underlying his method he can not give. The average cheese-maker goes through a certain series of operations, and gets results such as he can. He does not vary his

method in any respect for fear he may not get good results. Before cheese-making becomes a process that can be controlled in all its steps so as to make a uniform product, or a product that varies at the will of the maker, much purely scientific work must be done.

PLAN OF INVESTIGATION.

The milk.—The milk used in the different experiments was mixed milk of various breeds of cows. In some cases it consisted of milk from two or three days' milkings, while in most cases it consisted mainly of fresh morning milk, mixed with milk of the previous evening. The details regarding the character of the milk used are stated later in the description of the individual experiments. The amount of fat in the milk was regulated by skimming or adding cream, according to the conditions desired; the amount of fat was determined by the Babcock test, and if the per cent of fat was not found to be approximately the one desired, then cream or skim-milk was added and the mixture tested again, until the desired result was obtained. Only two tests were usually required, and in some cases the approximate amount was hit upon at the first trial. Special care was taken in sampling the milk for analysis; and, as the amount of milk used was not large, no difficulty was experienced in getting thoroughly representative samples.

Description of whey.—The whey was sampled at three different stages of the work, being called in the analytical tables *first whey*, *second whey* and *third whey*. The *first whey* included the great bulk of whey, which was first drawn from the curd. The *second whey* included the portion that drained from the curd, as soon as the whey running from the curd was no longer clear but became turbid and white in appearance. The amount was not large in any case, and in one or two cases, where the amount of fat in the milk was small, only clear whey drained from the curd. The *third whey* included the portion that drained from the curd after salt was added and also the drainings from the press. Any fat that came from the cheese by pressure was carefully rinsed by hot water into the *third whey*. The amount of whey was small in most cases and an accurate determination of the fat was difficult, as the fat accumulated on the surface of the whey in a separate

layer. In the sixth experiment, the third whey was lost by accident before being sampled.

Analysis of curd.—In several of the experiments, the curd was analyzed, but as it proved difficult to get representative samples, the analysis was abandoned. The chief difference in composition between the curd and green cheese is mainly in moisture and salt, and, in a much lesser degree, in fat and nitrogen compounds.

Analysis of cheese.—In six experiments, the first analysis of the cheese was made when the cheese was seven days old; in two experiments, the green cheese, as it came from the press, was sampled for analysis. In all experiments, each cheese was analyzed at the age of seven, twenty-one and thirty-five days, in order to ascertain the general changes taking place before cheese goes to market.

DIFFICULTIES CONNECTED WITH THE INVESTIGATION.

The principal source of difficulty in carrying on the work has been the sampling of cheese for analysis. It is highly desirable to get for analysis such a sample as will fairly represent the composition of the whole cheese. If a cheese could be cut up and portions selected here and there, the difficulty would be largely removed. But where it is necessary to preserve the cheese to continue the study of its composition through a period of several months, such a course is not feasible. The only practicable method and the one employed has been to use a regular cheese-trier, which takes out a cylinder of cheese about six inches long and five-eighths of an inch in diameter. The samples were taken from the cheese at points about half way between the center and circumference of the flat surface or face of the cheese. The cylinders thus taken are cut up into very thin pieces and the whole mixed carefully, pains being taken to prevent loss of moisture in the operation. From samples thus prepared, portions are weighed out for analysis. By comparing the pounds of constituents in the cheese as given by analysis of different samples of the same cheese, it will be noticed that in several instances the results are not consistent. For example, in the sixth experiment, the amount of casein in the cheese as obtained by analysis of different samples, taken at different times, is as follows: In green cheese, 9.1 pounds; in cheese seven days old, 8.68 pounds; in

cheese twenty-one days old, 9.26 pounds; in cheese thirty-five days old, 8.5 pounds. It is improbable, not to say impossible, that the amount of casein should vary so irregularly merely as a result of the ripening process. We can readily account for it only on the ground that there was a real difference in the samples analyzed. Irregular variation of other constituents is also noticeable. This is, perhaps, not surprising when we consider that a cheese is often more porous in some places than in others, that some of these pores are often filled with water or with pure fat, that the amount of moisture varies in different portions.

The determination of total solids gave considerable difficulty, while those of fat and nitrogen were, on the whole, fairly satisfactory. It will be noticed that the ash varies in a remarkable manner. Special pains were taken in experimenting with a large number of ash determinations but uniform results were difficult to obtain from different samples. The amount of ash constituents in a cheese should not vary, as they can not escape from the cheese in the process of ripening, and the pounds of ash should remain the same from week to week. From the decided variations found in different samples, we are led to believe that the salt is not distributed through the cheese with sufficient uniformity to enable one to make an accurate analysis for the whole cheese from one sample.

One series of experiments was made in which analyses of samples taken from the flat surface of the cheese were compared with those taken from the middle of the side. In some instances the agreement was fair, while in others the variation was marked. It is planned to make a more thorough examination of samples taken from different parts of cheese in order to see to what extent and in what manner different portions vary.

In addition to the difficulty of securing samples that represent the composition of the whole cheese, the methods of cheese analysis are imperfect in some respects.

NOTES ON ANALYTICAL METHODS.

Determinations of fat in cheese made by the Babcock method were compared with those made by the gravimetric method. Satisfactory duplicates were not obtained by the Babcock method nor did the results agree closely with the laboratory method and

its use was abandoned as not being sufficiently accurate for this special work. All the determinations of fat were made by the gravimetric method.

The determinations of acid in whey were made immediately after the samples were taken and were calculated as lactic acid.

In the tables containing analytical data, the actual number of pounds of ash and sugar is omitted, since the data are of no special value in this investigation. If any one is interested to learn the amounts, the data necessary for their calculation are in the tables.

In the detailed description of the individual experiments following, the experiments are arranged, not in chronological order, but according to the amount of fat in the milk used in each experiment, commencing with the lowest. This arrangement will make reference to the tables more convenient than an arrangement in chronological order.

FIRST EXPERIMENT.

1. *Date.*—September 19, 1891.

2. *Kind of cheese.*—Stirred-curd.

3. *Description of milk used.*—Morning milk, fresh, 61.56 pounds; evening milk, twelve hours old, 234.38 pounds; from which were taken 55.54 pounds of cream, leaving, for use in the experiment, of mixed whole milk and skim-milk, 240.4 pounds.

4. *Details of process of manufacture.*—Temperature of milk at beginning, 60° F.; commenced to heat at 9.50 A. M.; temperature of 86° F. reached at 10.25; Hansen's rennet extract added at 10.38; milk began to thicken at 10.46; curd cut at 11, and then stirred; commenced to heat again at 11.05; temperature of 93° reached at 11.30; whey drawn from curd at 1.06 P. M.; curd drained until 2.05 and then salted with 0.48 pounds of salt; curd put to press at 3.10. Amount of green cheese, 23.5 lbs.

ANALYSES CONNECTED WITH THE FIRST EXPERIMENT.

	COMPOSITION EXPRESSED IN PARTS PER HUNDRED.							COMPOSITION EXPRESSED IN POUNDS.					
	Per cent. of water.	Per cent. of total solids.	Per cent. of fat.	Per cent. of casein and albumen.	Per cent. of ash.	Per cent. of lactic acid.	Per cent. of sugar.	Pounds.	Pounds of water.	Pounds of total solids.	Pounds of fat.	Pounds of casein and albumen.	Pounds of lactic acid.
Milk	88.33	11.67	2.35	3.34	0.83	.....	5.15	240.40	212.34	28.06	5.65	8.03	.....
First whey.....	94.16	5.84	1.70	0.79	0.82	0.18	3.88	206.30	194.25	12.05	0.35	1.63	0.37
Second whey.....													
Third whey...	89.96	10.04	0.26	1.08	3.39	.....	5.31	6.63	5.96	0.67	0.02	0.07	.....
Cheese, green .....	.....	.....	.....	.....	.....	.....	.....	23.50	.....	.....	.....	.....	.....
Cheese, seven days	42.64	57.36	24.28	27.59	3.42	1.17	.....	22.90	9.76	13.14	5.56	6.31	0.27
Cheese, twenty-one days.....	42.22	57.78	23.47	26.60	2.83	1.06	.....	22.23	9.40	12.88	5.23	5.92	0.24
Cheese, thirty-five days	41.15	58.85	23.27	28.72	3.52	0.76	.....	21.75	8.95	12.80	5.06	6.25	0.17

SECOND EXPERIMENT.

1. *Date*.—September 22, 1891.
2. *Kind of cheese*.—Stirred-curd.
3. *Description of milk used*.—Morning milk, twenty-four hours old, 46.44 pounds; evening milk, twelve hours old, 246.56 pounds; “starter” added, seven pounds. Total amount of milk used in this experiment, 300 pounds.
4. *Details of process of manufacture*.—Temperature of milk at beginning, 65° F.; commenced to heat at 9.14 A. M.; temperature of 84° F. reached at 9.55; three-fourths of an ounce of Hansen’s rennet-extract added at 10; milk began to thicken at 10.11; commenced to cut curd at 10.20; commenced to stir at 10.25; commenced to heat again at 10.40; temperature of 96° F. reached at 11.25; whey drawn from curd at 12.20 P. M.; curd drained until 2; 0.75 pounds of salt added; curd put to press at 3.35. Amount of green cheese, 29 pounds.

ANALYSES CONNECTED WITH THE SECOND EXPERIMENT.

	COMPOSITION EXPRESSED IN PARTS PER HUNDRED.							COMPOSITION EXPRESSED IN POUNDS.					
	Per cent. of water.	Per cent. of total solids.	Per cent. of fat.	Per cent. of casein and albumen.	Per cent. of ash.	Per cent. of lactic acid.	Per cent. of sugar.	Pounds.	Pounds of water.	Pounds of total solids.	Pounds of fat.	Pounds of casein and albumen.	Pounds of lactic acid.
Milk	88.44	11.56	3.01	2.81	0.99	.....	4.75	300.00	265.32	34.68	9.03	8.43	.....
First whey	92.65	7.35	0.21	0.54	1.01	0.17	5.42	251.00	232.55	18.45	0.53	1.35	0.43
Second whey	92.41	7.59	0.22	0.81	1.07	0.26	5.23	12.10	11.18	0.92	0.03	0.10	0.03
Third whey	89.45	10.55	0.53	1.20	6.58	.....	2.24	4.68	4.18	0.50	0.02	0.06	.....
Cheese, green .....	.....	.....	.....	.....	.....	.....	.....	29.00	.....	.....	.....	.....	.....
Cheese, seven days	37.71	62.29	29.61	23.24	3.67	0.69	.....	28.00	10.56	17.44	8.29	6.51	0.19
Cheese, twenty-one days	36.98	63.02	29.97	24.38	3.79	0.79	.....	27.25	10.08	17.17	8.17	6.64	0.21
Cheese, thirty-five days	36.35	63.65	30.62	27.49	4.20	0.65	.....	26.56	9.66	16.90	8.13	7.30	0.17

THIRD EXPERIMENT.

1. *Date*.—September 18, 1891.

2. *Kind of cheese*.—Stirred-curd.

3. *Description of milk used*.—Evening milk, 12 hours old, 236.69 pounds, from which 14.5 pounds of cream were taken, leaving 222.19 pounds for experiment; fresh morning milk, 58.71 pounds; "starter," four pounds. Total amount of milk and skim-milk used in this experiment, 284.9 pounds.

4. *Details of process of manufacture*.—Temperature of milk at beginning, 77° F. commenced to heat at 9.34 A. M.; temperature of 85° F. reached at 9.50; "starter" added at 9.48, and seven-eighths of an ounce of rennet-extract at 9.50; milk began to thicken at 10; commenced to cut curd at 10.04, and to stir at 10.08; commenced to heat again at 10.24; temperature of 97° F. reached at 11.40; whey drawn from curd at 12.25 P. M.; curd drained until 1.45; 0.75 pounds of salt added; curd put to press at 3.50. Amount of green cheese, 31.13 pounds.

ANALYSES CONNECTED WITH THE THIRD EXPERIMENT.

	COMPOSITION EXPRESSED IN PARTS PER HUNDRED.							COMPOSITION EXPRESSED IN POUNDS.					
	Per cent. of water.	Per cent. of total solids.	Per cent. of fat.	Per cent. of casein and albumen.	Per cent. of ash.	Per cent. of lactic acid.	Per cent. of sugar.	Pounds.	Pounds of water.	Pounds of total solids.	Pounds of fat.	Pounds of casein and albumen.	Pounds of lactic acid.
Milk.....	87.47	12.53	3.88	3.45	0.91	.....	4.29	284.90	249.20	35.70	11.05	9.83	.....
First whey.....	93.30	6.70	0.31	1.04	0.58	0.16	4.61	233.20	217.57	15.63	0.72	2.43	0.37
Second whey	93.14	6.86	0.43	1.28	0.74	0.26	4.15	12.40	11.55	0.85	0.05	0.17	0.03
Third whey	85.99	14.01	0.60	1.36	5.96	.....	6.09	4.10	3.53	0.57	0.02	0.06	.....
Cheese, green.....	.....	.....	.....	.....	.....	.....	.....	31.13	.....	.....	.....	.....	.....
Cheese, seven days	35.09	64.91	34.60	24.37	3.09	1.27	.....	30.03	10.54	19.49	10.39	7.32	0.38
Cheese, twenty-one days.....	34.88	65.12	33.91	24.77	3.26	0.92	.....	29.40	10.26	19.14	9.97	7.28	0.27
Cheese, thirty-five days	34.53	65.47	34.96	25.65	3.88	0.72	.....	28.80	9.94	18.86	10.06	7.38	0.21

FOURTH EXPERIMENT.

1. *Date.*—October 9, 1891.

2. *Kind of cheese.*—Cheddar.

3. *Description of milk used.*—Evening milk, thirty-six hours old, 64.31 pounds, from which 12.75 pounds of cream were taken, leaving 51.56 pounds of skim-milk for use in experiment; evening milk, twelve hours old, 34.99 pounds, from which 5.78 pounds of cream were taken, leaving 29.21 pounds of skim-milk for experiment; evening milk, twelve hours old, 123.5 pounds; fresh morning milk, 71.38 pounds; cream, fifteen pounds; “starter,” 6.65 pounds. Total amount of whole milk, skim-milk and cream used in this experiment, 297 3 pounds.

4. *Details of process of manufacture.*—Temperature of milk at beginning 61° F.; commenced to heat at 8.45 A. M.; temperature of 85° F reached at 9.20; three-fourths of an ounce of rennet-extract added at 9.44; milk began to thicken at 9.52; commenced to cut curd at 10.02, and to stir at 10.07; commenced to heat again at 10.25; temperature of 98° F. reached at 11.18; whey drawn from curd at 12.40 P. M.; curd drained until 3.35, then salted and ground; 0.75 pounds of salt added; curd put to press at 3.50. Amount of green cheese 36.31 pounds.

ANALYSES CONNECTED WITH THE FOURTH EXPERIMENT.

	COMPOSITION EXPRESSED IN PARTS PER HUNDRED.							COMPOSITION EXPRESSED IN POUNDS.					
	Per cent. of water.	Per cent. of total solids.	Per cent. of fat.	Per cent. of casein and albumen.	Per cent. of ash.	Per cent. of lactic acid.	Per cent. of sugar.	Pounds.	Pounds of water.	Pounds of total solids.	Pounds of fat.	Pounds of casein and albumen.	Pounds of lactic acid.
Milk.....	87.57	12.43	3.96	3.81	0.88	.....	3.78	297.3	260.35	35.95	11.77	11.33	.....
First whey.....	93.76	6.24	0.31	1.07	0.61	0.17	4.08	240.19	225.20	14.99	0.74	2.57	0.41
Second whey	93.22	6.78	0.44	0.85	0.71	0.24	4.54	14.31	13.44	0.97	0.06	0.12	0.03
Third whey.....	90.93	0.07	0.95	1.24	4.88	0.65	1.35	4.25	3.86	0.39	0.04	0.05	0.03
Cheese, green	38.26	61.74	29.91	22.72	3.72	0.58	.....	36.31	13.89	22.42	10.86	8.25	0.21
Cheese, seven days	37.33	62.67	31.19	23.12	3.44	0.46	.....	35.28	13.17	22.11	11.00	8.16	0.16
Cheese, twenty-one days.....	38.01	61.99	29.51	24.38	3.78	0.42	.....	34.16	12.98	21.18	10.08	8.33	0.14
Cheese, thirty-five days	37.49	62.51	30.87	23.69	2.65	0.53	.....	33.44	12.54	20.90	10.32	7.92	0.17

FIFTH EXPERIMENT.

1. *Date*.—September 17, 1891.

2. *Kind of cheese*.—Stirred-curd.

3. *Description of milk used*.—Morning milk, 48 hours old, 32.56 pounds; evening milk, 36 hours old, 45.06 pounds; morning milk, 24 hours old, 72.56 pounds; evening milk, 12 hours old, 108.44 pounds; fresh morning milk, 63.19 pounds; “starter,” 4 pounds. Total amount of milk used in this experiment, 325.8 pounds.

4. *Details of process of manufacture*.—Temperature of milk at beginning, 63° F.; commenced to heat at 9.20 A. M.; temperature of 84° F. reached at 9.45; “starter” added at 9.45 and then one ounce of rennet-extract; milk began to thicken at 9.59; commenced to cut curd at 10.08; and to stir at 10.14; commenced to heat again at 10.31; temperature of 98° F. reached at 11.29; whey drawn from curd at 1.20 P. M.; curd drained until 2.20; 0.81 pounds of salt added; curd put to press at 4. Amount of green cheese, 38.6 pounds.

ANALYSES CONNECTED WITH THE FIFTH EXPERIMENT.

	COMPOSITION EXPRESSED IN PARTS PER HUNDRED.							COMPOSITION EXPRESSED IN POUNDS.					
	Per cent. of water.	Per cent. of total solids.	Per cent. of fat.	Per cent. of casein and albumen.	Per cent. of ash.	Per cent. of lactic acid.	Per cent. of sugar.	Pounds.	Pounds of water.	Pounds of total solids.	Pounds of fat.	Pounds of casein and albumen.	Pounds of lactic acid.
Milk	86.42	13.58	4.70	3.91	0.65	.....	4.32	325.8	281.56	44.24	15.31	12.73	.....
First whey	93.10	6.90	0.41	1.25	0.59	0.21	4.45	266.2	247.83	18.37	1.09	3.30	0.56
Second whey	92.54	7.46	0.56	1.03	0.61	0.30	4.96	7.8	7.22	0.58	0.04	0.08	0.02
Third whey	89.29	10.71	1.04	0.99	5.25	.....	3.43	3.5	3.13	0.37	0.04	0.03	.....
Cheese, green .....	.....	.....	.....	.....	.....	.....	.....	38.6	.....	.....	.....	.....	.....
Cheese, seven days	33.68	66.32	35.32	24.32	3.45	0.64	.....	37.3	12.56	24.74	13.17	9.07	0.24
Cheese, twenty-one days	33.36	66.64	36.47	24.84	3.76	0.73	.....	36.6	12.21	24.39	13.35	9.09	0.27
Cheese, thirty-five days	33.20	66.80	35.93	25.08	5.29	0.54	.....	36.06	11.97	24.09	12.97	9.04	0.19

SIXTH EXPERIMENT.

1. *Date*.—October 8, 1891.

2. *Kind of cheese*.—Cheddar.

3. *Description of milk used*.—Morning milk, 48 hours old, 24.81 pounds, from which were taken 5.31 pounds of cream, the cream alone being used for the experiment; evening milk, 36 hours old, 52.56 pounds; morning milk, 24 hours old, 72.75 pounds, from which were taken 15.88 pounds of cream, all the cream and 40 pounds of the skim-milk being used; evening milk, 12 hours old, 127.13 pounds; fresh morning milk, 68.68 pounds; "starter," eight pounds. Total amount of whole milk, skim-milk and cream used for this experiment, 317.56 pounds.

4. *Details of process of manufacture*.—Temperature of milk at beginning, 61° F.; commenced to heat at 9.30 A. M.; temperature of 84° F. reached at 10; "starter" added at 10; three-fourths of an ounce of rennet-extract added at 10.20; milk began to thicken at 10.31; commenced to cut curd at 10.40, and to stir at 10.47; commenced to heat again at 11; temperature of 97° F. reached at 11.55; whey drawn from curd at 12.30 P. M.; curd drained until 3.30; 0.81 pounds of salt added at 3.30; curd ground at 3.40 and put to press at 4.05. Amount of green cheese, 41.56 pounds.

ANALYSES CONNECTED WITH THE SIXTH EXPERIMENT.

	COMPOSITION EXPRESSED IN PARTS PER HUNDRED.							COMPOSITION EXPRESSED IN POUNDS.						
	Per cent. of water.	Per cent. of total solids.	Per cent. of fat.	Per cent. of casein and albumen.	Per ash.	Per cent. of lactic acid.	Per cent. of sugar.	Pounds.	Pounds of water.	Pounds of total solids.	Pounds of fat.	Pounds of casein and albumen.	Pounds of lactic acid.	
Milk.....	85.72	14.28	4.73	3.53	0.93	.....	5.09	317.56	272.21	45.35	15.02	11.21	.....
First whey.....	92.92	7.08	0.39	0.75	0.54	0.16	5.24	249.47	231.81	17.66	0.97	1.87	0.40	
Second whey.....	92.04	7.96	0.19	1.12	0.69	0.25	5.71	16.00	14.73	1.27	0.03	0.18	0.04	
Third whey.....	.....	.....	.....	.....	.....	.....	.....	4.78	.....	.....	.....	.....	.....
Cheese, green.....	37.60	62.40	33.53	21.91	3.11	0.62	.....	41.56	15.63	25.93	13.93	9.10	0.26
Cheese, seven days.....	38.00	62.00	34.81	21.47	2.97	0.52	.....	40.42	15.36	25.06	14.07	8.68	0.21
Cheese, twenty-one days.....	36.13	63.87	34.89	23.56	5.14	0.56	.....	39.30	14.20	25.10	13.71	9.26	0.22
Cheese, thirty-five days.....	37.88	62.12	34.79	22.10	4.40	0.54	.....	38.47	14.57	23.90	13.38	8.50	0.20

SEVENTH EXPERIMENT.

1. *Date*.—September 23, 1891.
2. *Kind of cheese*.—Stirred-curd, using home-made rennet-extract.
3. *Description of milk used*.—Morning milk, 24 hours old, 67.75 pounds; evening milk, 12 hours old, 243.88 pounds; “starter,” 4.67 pounds. Total amount of milk used in this experiment, 316.3 pounds.
4. *Details of process of manufacture*.—Temperature of milk at beginning, 72° F.; commenced to heat at 9.10 A. M.; temperature of 82° F. reached at 9.35; “starter” added at 9.35; *one-sixth of whole solution prepared fresh from one rennet* added at 9.45; milk began to thicken at 9.55; commenced to cut curd at 10.04; and to stir at 10.12; commenced to heat again at 10.25; temperature of 97° F. reached 11.20; whey drawn from curd at 1.15 P. M.; curd drained until 1.45; 0.63 pounds of salt added at 1.45; curd put to press at 3.10. Amount of green cheese, 38.8.

ANALYSES CONNECTED WITH THE SEVENTH EXPERIMENT.

	COMPOSITION EXPRESSED IN PARTS PER HUNDRED.							COMPOSITION EXPRESSED IN POUNDS.					
	Per cent. of water.	Per cent. of total solids.	Per cent. of fat.	Per cent. of casein and albumen.	Per cent. of ash.	Per cent. of lactic acid.	Per cent. of sugar.	Pounds.	Pounds of water.	Pounds of total solids.	Pounds of fat.	Pounds of casein and albumen.	Pounds of lactic acid.
Milk.....	86.31	13.69	4.80	3.24	1.03	.....	4.62	316.3	273.0	43.30	15.18	10.25	.....
First whey.....	92.56	7.44	0.40	0.92	1.20	0.25	4.67	252.0	233.25	18.75	1.01	2.32	0.63
Second whey.....	92.06	7.94	0.77	1.03	1.37	0.39	4.38	15.80	14.55	1.25	0.12	0.16	0.06
Third whey.....	87.12	12.88	0.69	1.26	6.55	.....	4.38	6.68	5.82	0.86	0.05	0.08	.....
Cheese, green.....	.....	.....	.....	.....	.....	.....	.....	38.80	.....	.....	.....	.....	.....
Cheese, seven days.....	35.89	64.11	38.61	21.41	2.80	0.70	.....	37.75	13.48	24.07	14.50	8.04	0.26
Cheese, twenty-one days.....	35.67	64.33	38.82	22.55	2.70	0.65	.....	36.09	12.87	23.22	14.01	8.14	0.23
Cheese, thirty-five days.....	36.05	63.95	39.50	23.53	3.11	0.62	.....	35.19	12.68	22.51	13.90	8.28	0.21

EIGHTH EXPERIMENT.

1. *Date*.—September 21, 1891.

2. *Kind of cheese*.—Stirred-curd.*

3. *Description of milk used*.—Cream 60 hours old, 43 pounds cream, 48 hours old, 12 pounds; cream, 24 hours old, 9 pounds morning milk, 24 hours old, 29 pounds; cream, 12 hours old, 10 pounds; evening milk, 12 hours old, 237 pounds. Total amount of milk and cream used in this experiment, 340 pounds.

4. *Details of process of manufacture*.—Temperature of milk at beginning, 65° F.; commenced to heat at 9.28 A. M.; temperature of 82° F. reached at 9.52; 1½ ounces of rennet-extract added at 9.53; milk began to thicken at 10.03; commenced to cut curd at 10.12 and to stir at 10.18; commenced to heat again at 10.30 temperature of 97° F. reached at 11.25; whey drawn from curd at 1 P. M.; curd drained until 1.35; 1.2 pounds of salt added; curd put to press at 3.30. Amount of green cheese 46.7 pounds.

ANALYSES CONNECTED WITH THE EIGHTH EXPERIMENT.

	COMPOSITION EXPRESSED IN PARTS PER HUNDRED.							COMPOSITION EXPRESSED IN POUNDS.					
	Per cent. of water.	Per cent. of total solids.	Per cent. of fat.	Per cent. of casein and albumen.	Per cent. of ash.	Per cent. of lactic acid.	Per cent. of sugar.	Pounds.	Pounds of water.	Pounds of total solids.	Pounds of fat.	Pounds of casein and albumen.	Pounds of lactic acid.
Milk	83.90	16.10	6.49	3.37	0.67	.....	5.57	340.00	285.26	54.74	22.07	11.46	.....
First whey	93.14	6.86	0.76	0.96	0.63	0.20	4.31	267.10	248.78	18.32	2.03	2.56	0.53
Second whey	92.86	7.14	0.57	1.18	0.71	0.29	4.39	9.40	8.73	0.67	0.05	0.12	0.03
Third whey	85.17	14.83	4.81	0.87	3.89	.....	5.26	7.25	6.17	1.08	0.35	0.07	.....
Cheese, green .....	.....	.....	.....	.....	.....	.....	.....	46.70	.....	.....	.....	.....	.....
Cheese, seven days	31.95	68.05	43.53	17.28	3.22	0.58	.....	45.10	14.41	30.69	19.63	7.79	0.26
Cheese, twenty-one days	32.35	67.65	44.94	17.86	2.92	0.72	.....	43.50	14.07	29.43	19.55	7.76	0.31
Cheese, thirty-five days	32.23	67.77	45.36	18.45	3.61	0.51	.....	42.56	13.72	28.84	19.30	7.85	0.22

NINTH (FACTORY) EXPERIMENT.

On September twenty-fifth, Mr. G. A. Smith superintended the making of cheese at the factory of Mr. G. Merry at Verona, N. Y. A small cheese made from the lot of milk was sent to the Station by Mr. Merry. Mr. Smith tested the milk and whey for fat by the Babcock test and sent samples of milk, whey and curd to the Station for analysis; but owing to long delay in reaching the Station, the samples of milk and whey were not in a fit condition to yield satisfactory results. The curd was analyzed, also the cheese at three and five weeks. The results which are, of necessity, fragmentary, are given here:

1. *Date*.—September 25, 1891.
2. *Kind of cheese*.—Cheddar.
3. *Description of milk used*.—Mixed factory milk, 3,200 pounds.
4. *Details of process of manufacture*.—Rennet added at 8.31 A. M.; curd cut at 9.05; commenced to heat second time at 9.20; temperature of 99° F. reached at 10.20; whey drawn from curd at 12.20 P. M.; curd ground and salted at 3.40; eight pounds of salt added.

ANALYSES CONNECTED WITH FACTORY EXPERIMENT.

	COMPOSITION EXPRESSED IN PARTS PER HUNDRED.							COMPOSITION EXPRESSED IN POUNDS.					
	Per cent. of water.	Per cent. of total solids.	Per cent. of fat.	Per cent. of casein and albumen.	Per cent. of ash.	Per cent. of lactic acid.	Per cent. of sugar.	Pounds.	Pounds of water.	Pounds of total solids.	Pounds of fat.	Pounds of casein and albumen.	Pounds of lactic acid.
Milk.....	.....	.....	3.70	..	.....	.....	.....	3200.0	.....	.....	118.4	.....	.....
Whey.....	.....	.....	0.30	.....	.....	.....	.....	*2870.0	.....	.....	8.6	.....	.....
Curd.....	38.49	61.51	33.14	22.74	4.07	0.53	5.80	.....	.....	.....	.....	.....	.....
Cheese, three weeks.....	35.26	64.74	34.62	25.08	3.27	0.65	.....	*317.7	112	205.7	109.9	79.7	2.06
Cheese, five weeks.....	35.67	64.33	34.49	25.33	1.81	0.59	.....	311.4	111	200.4	107.4	78.9	1.84

* Estimated.

TABULATED STATEMENT OF THE PRINCIPAL CONDITIONS OF MANUFACTURE.

NO. OF EXPERI- MENT.	Temperature of milk at start.	Time taken to heat to 85° F.	Time from adding rennet to cutting curd.	Time taken to heat to 98° F., after cutting and sur- ring.	Time from reach- ing 98° F., to drawing whey.	Time from draw- ing whey to salt- ing.	Time from salting to putting in press.	Time of whole operation.
	Deg.	Min.	Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.	Hrs. Min.
1	60	35	20	25	1 36	59	1 05	6 00
2	65	41	20	45	55	1 40	1 15	6 21
3	77	16	14	1 16	45	1 20	2 05	6 16
4	61	35	18	53	1 22	2 55	15	7 05
5	63	25	23	58	1 51	1 00	1 40	6 40
6	61	30	20	55	35	3 00	10	6 10
7	72	25	19	55	1 55	30	1 25	9 00
8	65	24	19	55	1 35	35	1 55	6 02
9 .....	....	....	34	1 00	2 00	3 00	.....	.....

In comparing some of the more important conditions of manufacture in the different experiments, we note the following among some of the interesting points :

1. The time in which the casein was coagulated by the rennet sufficiently to cut was quite uniform in the Station experiments ; it averaged about nineteen minutes, in six of the experiments the variation being not over one minute from this average. The home-made rennet-extract coagulated the casein in nineteen minutes

2. The time required to heat the curd and whey to about 98° F. after cutting and stirring averaged about fifty-three minutes, in five of the experiments the variation being within five minutes of this time.

3. The time from reaching the temperature of 98° F. to drawing the whey averaged about an hour and twenty-three minutes, the variation from this average being from thirty-eight minutes below to thirty-two minutes above. This portion of the operation appears to have been less under the control of the maker than the preceding conditions.

4. The time from drawing whey to salting curd averaged, in the case of the stirred-curd process, about one hour, with a variation from thirty minutes below to forty minutes above. In the Cheddar process, the time was about three hours and was quite uniform.

5. The time from salting curd to putting it to press varies, in the stirred-curd process, from one hour and five minutes to two hours and five minutes, the average being one hour and thirty-four minutes. In the Cheddar process the time was only ten or fifteen minutes.

6. The time occupied by the whole operation of cheese-making from the beginning to the end varies from six to seven hours, the average being six hours and twenty minutes. In six of the experiments the extreme variation was about twenty minutes, the average being six hours and eight minutes.

7. From an examination and comparison of the data, it appears that the time which the rennet takes to act upon the casein is independent of the amount of total solids, fat, or nitrogen compounds. The rapidity of action of rennet probably depends upon (1st) the amount of rennet used, (2d) the temperature of the milk, and (3d) the degree of ripeness of the milk.

FLAVOR AND TEXTURE OF CHEESE.

When the stirred-cured cheeses were about one month old and the Cheddars were about fifteen days old, they were sampled and examined by Mr. Geo. A. Smith. Though the description is general and may not mean much to one unacquainted with cheese, it will have a fairly definite meaning for those who are accustomed to examining cheese. The numbers correspond to the experiments as already given.

1. Flavor, mild; texture, good, but rather dry.
2. Flavor, mild; texture, fine and dry.
3. Flavor, perfect; texture, fine.
4. Flavor, good, but not acid enough for a fine shipping cheese; texture, dry but loose.
5. Flavor, good; texture, good.
6. Flavor, perfect; texture, fine, close, solid.
7. Flavor, perfect, like fine butter; texture, perfect; a very fine shipping cheese, best of lot. Would be classed by shipper as a fancy September cheese.
8. Flavor, very good; texture, very silky; a fine-eating cheese.

LOSS OF MILK CONSTITUENTS IN CHEESE-MAKING.

Under this head the following points will be discussed:

1. Amount of fat recovered and lost in making cheese.
2. Amount of casein and albumen recovered and lost in making cheese.
3. Relation of albumen to casein in milk.
4. Influence of relation of fat to casein and albumen in milk on loss of these compounds in cheese-making.
5. Summary of results.

AMOUNT OF FAT RECOVERED AND LOST IN MAKING CHEESE.

Method of making calculations.—In ascertaining the amount of fat lost and recovered in cheese-making, two methods may be employed. First, the amount of fat in the three wheys represents the loss, and this amount subtracted from the amount of fat in the milk represents the amount of fat recovered in the cheese. This method makes no allowance for loss of material in handling, but loss from this source is so slight as to make little or no appreciable difference in the results. The second method of calculating the loss of fat is to take the amount of fat found in the cheese by analysis, which is the amount recovered, and subtract this from the amount of fat in the milk; the difference represents the amount of fat lost. The results obtained by these two methods should agree, one serving as a check upon the other, if there were no source of error in the analysis of the cheese; but, as previously pointed out, it is extremely difficult to sample a cheese in such a way that the sample analyzed shall represent the composition of the whole cheese, unless we cut up the cheese. Consequently, the results of loss and recovery of fat, as obtained by these two methods of calculation, do not agree closely, as a rule. The method adopted as giving the more satisfactory results is the first; that is, taking the fat in the wheys as representing the loss. This subtracted from the fat in the milk gives the amount of fat recovered in the *green cheese*. The amount of fat in a marketable cheese, three to five weeks old, is, under ordinary circumstances, somewhat less than in the green cheese, but, for purposes of comparison in regard to the loss of fat in making cheese, the method

adopted gives satisfactory results. The loss of fat in the process of ripening will be noticed later.

In the following table, the amounts of fat lost and recovered are presented in two ways; first, the number of pounds of fat lost and recovered in 100 pounds of milk is given; second, the proportion of fat in milk lost and recovered is given; that is, the pounds of fat lost and recovered for 100 pounds of fat in the milk. Taking the first experiment, for example, the amount of fat in the milk is 2.35 pounds in 100 pounds of milk; of this amount, .154 pounds are lost or 6.55 per cent of the whole amount of fat in the milk. That is the same as saying that, if from 2.35 pounds of fat in milk, .154 pounds of fat are lost, then from 100 pounds of fat in milk, 6.55 pounds would be lost. As previously stated, the balance remaining after taking out the amount lost is assumed to be the amount recovered in the green cheese.

TABLE SHOWING AMOUNT OF FAT LOST AND RECOVERED IN MAKING CHEESE.

NUMBER OF EXPERI- MENT.	Pounds of fat in 100 lbs. of milk.	Pounds of fat lost in 100 lbs. of milk.	Pounds of fat recovered in 100 lbs. of milk.	Pounds of fat lost in whey from 100 lbs. of fat in milk.	Pounds of fat recovered in green cheese from 100 lbs. of fat in milk.
1.....	2.35	0.154	2.196	6.55	93.45
2.....	3.01	0.13	2.817	6.42	93.58
3.....	3.88	0.277	3.603	7.15	92.85
4.....	3.96	0.283	3.677	7.14	92.86
5.....	4.70	0.359	4.341	7.64	92.36
6.....	4.73	0.331	4.399	6.99	93.01
7.....	4.80	0.373	4.427	7.77	92.23
8.....	6.49	0.715	5.775	11.01	88.99
9.....	3.70	0.269	3.431	7.26	92.74

STATEMENT OF RESULTS.

In examining the above table, we notice the following points of interest:

1. The amount of fat lost in the whey increases gradually, but not uniformly, as the amount of fat in the milk increases.

If we take the fat in the first milk as unity and also the amount of fat lost as unity, and arrange the succeeding numbers on this:

basis, we can trace the relation between the increase of loss and the increase of fat in the milk.

	NUMBER OF EXPERIMENT.							
	1	2	3	4	5	6	7	8
Increase of fat in milk	1	1.28	1.65	1.68	2.00	2.01	2.04	2.76
Increase of loss of fat in whey	1	1.25	1.80	1.84	2.33	2.15	2.42	4.64
Difference between above	0	0.03	0.15	0.16	0.33	0.14	0.38	1.88

Calling the amount of fat in the first milk *one*, the amount of fat in the second is 1.28 times that in the first; the fat in the third is 1.65 times that in the first, etc. Calling the amount of fat lost in the whey in the first experiment *one*, the amount of fat lost in the second is 1.25 times that in the first; the fat lost in the third is 1.80 times that lost in the first, etc. If the increase of loss were uniform with the increase of fat in the milk, the two sets of numbers would be the same. In the second experiment, both numbers would be 1.28, if the loss were uniform with the increase of fat in the milk. Instead of 1.28, the loss is 1.25, so that the increase of loss is not quite so large as the increase of fat in the milk. In the remaining experiments, the increase of loss of fat is greater in proportion than the increase of fat in the milk, the relation between the two sets of numbers tending to grow wider apart as the fat in the milk increases. Leaving out the sixth experiment, the increase in loss is relatively in excess of the increase of fat in the milk by a steadily increasing amount.

2. The average amount of fat lost in the nine experiments is 0.329 pounds in 100 pounds of milk; excluding the eighth experiment, the average loss of fat for 100 pounds of milk is 0.28 pounds; or taking only the second, third and fourth experiments, which most closely represent factory milk, the loss of fat is 0.25 pounds, for each hundred pounds of milk. If the same milk were made into butter, the loss of fat would be considerably greater than the above, unless the best dairy appliances and highest skill were used.

3. Basing a comparison of loss of fat in the different experiments upon 100 pounds of fat in the milk, we notice that the loss is least in the second experiment, although the milk in this case

contains more fat than in the first experiment. No definite cause can be given for this apparent discrepancy; we should expect a greater proportion of loss in the second experiment. The larger proportion of loss in the first experiment was probably due to some unknown condition in some part of the process of manufacture. A similar apparent exception to the general tendency occurs in the sixth experiment, where the proportion of fat lost is less than in the fifth or seventh experiments, though the fat in the milk of these three experiments is nearly the same. The difference here may be due to the fact that, in the sixth experiment, the Cheddar process was used, while the stirred-curd process was used in the other two cases.

The increase of relative loss of fat is not great, until we get to milk containing over four pounds of fat in 100 pounds of milk; and, even in the first seven experiments, the difference of loss, between the highest and lowest cases, is only 1.35 pounds for 100 pounds of fat in the milk.

4. The average loss of fat in all the experiments is about 7.55 pounds of fat for every hundred pounds of fat in the milk, the average amount of fat in all the milks being 4.18 pounds of fat in 100 pounds of milk. Omitting the eighth experiment, the average number of pounds of fat per hundred pounds of milk is 3.89 while the loss of fat averages 7.1 pounds for 100 pounds of fat in milk. Taking the average of the second, third and fourth experiments, which more nearly represent average factory milk, the amount of fat in 100 pounds of milk is 3.62, and the average loss of fat is 6.9 pounds for 100 pounds of fat in milk.

5. In the comparison made between the *stirred-curd* and *Cheddar* processes, the amount of fat lost in the third and fourth experiments is practically the same, the fat in the milk being nearly the same in amount. In the fifth, sixth and seventh experiments, when the fat in the milk was about the same, being between 4.7 and 4.8 per cent., the Cheddar process gave considerably better results. That the difference in favor of the Cheddar process in this case was due to the Cheddar process, we can not say; changes, due to other conditions in the process of manufacture, may have made the difference. Before we can draw any definite conclusions in regard to loss of fat in the Cheddar process

as compared with the stirred-curd, many other experiments will be needed.

6. As regards the use of commercial rennet-extract and the home-made rennet-extract, the fifth and seventh experiments show practically no difference as regards the amount of fat lost.

AMOUNT OF CASEIN AND ALBUMEN RECOVERED AND LOST IN MAKING CHEESE.

It has already been stated that casein is coagulated by rennet and albumen is not. In cheese-making, it is probable that some of the casein is lost in the whey, while some of the albumen is retained mechanically in the cheese in the same way that water is retained. So, in the cheese, we have most of the casein and a small portion of the albumen, while, in the whey, we have most of the albumen and a small portion of casein. Future experiments will be made to determine the amount of casein and albumen separately in the whey. The presence of albumen in green cheese to the extent of one or two per cent was indicated by analysis, as will be noticed later.

In the table presented below, the figures representing the amount of casein recovered in the green cheese and lost in the whey are obtained in the manner already explained in connection with the loss and recovery of fat.

TABLE SHOWING AMOUNT OF CASEIN AND ALBUMEN RECOVERED AND LOST IN MAKING CHEESE.

NUMBER OF EXPERIMENT.	Pounds of casein and albumen in 100 pounds of milk.	Pounds of casein and albumen recovered in 100 pounds of milk.	Pounds of casein and albumen lost in 100 pounds of milk.	Pounds of casein and albumen lost in whey from 100 pounds of casein and albumen in milk.	Pounds of casein and albumen recovered in cheese from 100 pounds of casein and albumen in milk.
1.....	3.34	2.63	0.71	21.17	78.83
2.....	2.81	2.31	0.50	17.91	82.09
3.....	3.45	2.52	0.93	27.06	72.94
4.....	3.81	2.89	0.92	24.18	75.82
5.....	3.91	2.86	1.05	26.78	73.22
6.....	3.53	2.90	0.63	17.93	82.07
7.....	3.24	2.43	0.81	24.97	75.03
8.....	3.37	2.56	0.81	24.00	76.00

Statement of results.

1. The proportion of casein and albumen lost or recovered appears to bear no definite or fixed relation to the total amount of casein and albumen in the milk.

In the first and eighth experiments, the amount of casein and albumen in the milk is practically the same, but there is a difference of nearly three per cent. in the amount lost or recovered. In the third and sixth experiments, the casein and albumen in the milk is nearly the same in amount, while the difference in the amount lost or recovered is over nine per cent.

2. The average per cent. of casein and albumen in the milk in all the experiments is 3.43; the proportion of this amount that was lost averages twenty-three per cent. or twenty-three pounds for every 100 pounds of casein and albumen in the milk.

3. The use of commercial rennet-extract and home-made extract appears to show no difference as regards the amount of casein and albumen lost and recovered.

4. The variations shown in the proportion of casein and albumen lost and recovered are probably to be attributed to variation in details of manufacture.

RELATION OF ALBUMEN TO CASEIN IN MILK.

If we assume that the albumen is represented by the loss of nitrogen compounds, then it would appear that the relation of albumen to casein varies considerably. Blyth, an English authority, says: "The amount of albumen in milk is really fairly constant and averages .7 per cent. In healthy cows, it is a very constant quantity. According to the author's experience, the albumen preserves a very constant relation to the casein, the quantity of the latter being five times that of the albumen; so that, if either the amount of casein or albumen is known, the one may be calculated from the other with great accuracy." The foregoing statement has been quite generally accepted as true. However, from an examination of a large number of analyses of normal milk, reported by various men, where casein and albumen were determined separately, there appears to be considerable variation instead of uniformity. Some cases are reported where there was only one part of albumen to ten of casein; while, at the

other extreme, there was one part of albumen to three of casein, while the average of a large number was one of albumen to six of casein.

If the loss in the above table represents albumen, then we have this compound varying from below 18 per cent. to over 27 per cent. of the nitrogen compounds; or, stated in another way, there is for the lowest, one part of albumen to 2.7 parts of casein and, for the highest number, one part of albumen to 4.6 parts of casein; in all the average is one part of albumen to 3.5 parts of casein. If the relation were, as Blyth states, one part of albumen to five of casein, then the loss in every hundred pounds of casein and albumen in milk would be less than 17 pounds, while in these experiments, the least loss is nearly 18 pounds and the greatest over 27 pounds. This can be explained by assuming that a definite amount of albumen, say 17 pounds, was lost, and that the variation from 18 to 27 pounds was caused by an additional loss of casein, varying in the different experiments. While these results are merely suggestive in regard to the relation of casein and albumen in the milk, it is evident that here is a field for investigation in the future. It is probably not sufficiently correct to assume that all the loss is albumen, but, doubtless, some casein and most of the albumen go into the whey, while most of the casein and some albumen go into the cheese; the amount of casein lost probably depends upon variation in the details of cheese-making.

In this connection, it may be stated that efforts have been made to recover the albumen in the cheese. Doubtless, most of the albumen can be recovered, but it remains to be seen what effect its presence in considerable quantities may have upon the keeping and other qualities of the cheese.

INFLUENCE OF RELATION OF FAT TO CASEIN AND ALBUMEN IN MILK
ON LOSS OF THESE COMPOUNDS IN CHEESE-MAKING.

NUMBER OF EXPERIMENT.	Pounds of fat for one pound of casein and albumen in the milks used.	Pounds of fat lost in whey from 100 pounds of fat in milk.	Pounds of casein and albumen lost in whey from 100 pounds of casein and albumen in milk.
1	0.70	6.55	21.17
2	1.07	6.42	17.91
3	1.12	7.15	27.06
4	1.04	7.14	24.18
5	1.20	7.64	26.78
6	1.34	6.99	17.93
7	1.48	7.77	24.97
8	1.92	11.01	24.00

Statement of results.

1. An examination of the above table indicates, in a general way, that where the fat in the milk is large in amount as compared with the casein and albumen, the loss of fat in the whey is greater than where the fat and casein in the milk are more nearly alike.

Thus, in the first experiment, there is more casein and albumen than fat in the milk and the loss of fat is 6.55 per cent. The second experiment is exceptional to the general statement, also the fourth and sixth experiments. The seventh and eighth show the tendency in a quite marked degree. The lack of uniformity in the results may be accounted for by variations in the details of manufacture, independent of the relation of the fat to the casein and albumen in the milk.

We should expect such a tendency, for, when the proportion of casein and albumen is larger, more fat will be held in the curd and less loss in the whey, provided the treatment in manufacture is the same.

The loss of fat would not have been so large in the milks that contained the higher percentage of fat, had those milks been normal. Thus, in a normal milk containing 6.49 per cent of fat, there would be about 1.44 pounds of fat to one pound of casein and albumen, but in the milk used, there were nearly two pounds of fat

to one of casein and albumen. As already stated, the amount of casein and albumen in the different milks was fairly constant, while the fat varied greatly, and the casein was, in the extreme cases, insufficient to hold the fat as completely as in the other cases.

2. The relation of fat to casein and albumen in milk does not appear to be, in any way, connected with the amount of casein and albumen lost. In the second and sixth experiments, the loss of albumen and casein is the same, but there is, in the latter case, much more fat for the same amount of casein and albumen.

SUMMARY OF RESULTS RELATING TO LOSS OF MILK-CONSTITUENTS IN CHEESE-MAKING.

1. *Fat.*

a. The actual amount, as well as the proportion, of milk-fat lost in the whey increased gradually, but not uniformly, when the amount of fat in the milk increased.

b. The average amount of fat lost in the whey in all the experiments was about one-third of a pound for 100 pounds of milk, which was about 7.5 per cent. of the milk-fat. Taking only those experiments which most nearly represented average factory milk, the average amount of milk-fat lost was one-quarter of a pound for 100 pounds of milk, which was nearly seven per cent. of the milk-fat.

c. While it was true that the loss of fat increased, both absolutely and relatively, when the amount of fat in the milk increased, it was not true that all the additional fat above four per cent., or even above five and one-half per cent., was lost in the whey.

2. *Casein and albumen.*

a. The amount of casein and albumen lost appeared to bear no definite relation to the total amount of casein and albumen in the milk.

b. The average amount of casein and albumen in the milk in the eight experiments was 3.43 pounds per hundred pounds of milk; of this amount, about twenty-three per cent. or about 0.8 pounds were lost.

c. The irregular variations in the proportion of casein and albumen lost were probably due to variations in the conditions of manufacture.

3. *Loss of fat and of casein and albumen in cheese-making as influenced by proportion of fat to casein and albumen in milk.*

a. When the amount of casein and albumen in the milk was nearly the same as, or greater than, the amount of fat, the loss of fat was least. When the amount of fat became considerably greater than the amount of casein and albumen, then the loss of fat increased. Comparatively large proportions of casein served to hold the fat more completely in the curd, as would be expected.

b. The amount of fat in the milk appeared, in no way, to have any influence on the amount of casein and albumen lost in the process of manufacture.

VI. INFLUENCE OF COMPOSITION OF MILK ON COMPOSITION OF CHEESE.

Under this head the following points will be considered :

1. Influence of fat in milk on composition of cheese.
2. Influence of casein and albumen in milk on composition of cheese.
3. Influence of relation of fat to casein and albumen in milk on composition of cheese.
4. Summary of results.

INFLUENCE OF FAT IN MILK ON COMPOSITION OF CHEESE.

It might, perhaps, be assumed that the amount of fat in a cheese is largely dependent upon the amount of fat in the milk from which the cheese is made. This would, of course, be modified by the amount of fat that is lost in making, also by the amount of water in the cheese, which depends upon the process of manufacture; the amount of casein in the cheese would also have some influence.

The figures representing the pounds of fat, water, etc., in the table below are obtained by averaging the different analyses of each cheese.

TABLE SHOWING RELATIONS OF FAT IN MILK TO COMPOSITION OF CHEESE.

NUMBER OF EXPERIMENT.	Pounds of fat in 100 lbs. of milk.	Pounds of fat in 100 lbs. of cheese.	Pounds of water in 100 lbs. of cheese.	Pounds of casein in 100 lbs. of cheese.
1	2.35	23.7	42.0	27.6
2	3.01	30.6	37.0	25.0
3	3.88	34.5	34.8	24.9
4	3.96	30.4	37.8	23.5
5	4.70	35.9	33.4	24.7
6	4.73	34.5	37.4	22.3
7	4.80	39.0	35.9	22.5
8	6.49	44.6	32.2	17.9
9	3.70	34.6	35.5	25.2

Statement of results.

1. The amount of fat in a cheese tends to increase, but not uniformly, when the amount of fat in the milk increases.

An examination of the above table shows that in the first, second, third, fifth, seventh and eighth experiments the above statement holds good.

If we take the amount of fat in the first milk as *one*, and the amount of fat in 100 pounds of the first cheese as *one*, and arrange the succeeding numbers on this basis, we can trace the general relation between the increase of fat in the milk and the increase of fat in the cheese.

	NUMBER OF EXPERIMENT.							
	1	2	3	4	5	6	7	8
Increase of fat in milk.....	1	1.28	1.65	1.68	2.00	2.01	2.04	2.76
Increase of fat in cheese	1	1.29	1.45	1.28	1.51	1.45	1.64	1.88
Difference between above.	....	0.01	0.20	0.40	0.49	0.56	0.40	0.88

Calling the amount of fat in 100 pounds of milk *one*, the amount of fat in the second is 1.28 times that in the first; the fat in the third is 1.65 times that in the first, etc. Calling the amount of fat in 100 pounds of cheese *one*, in the first experiment, the amount of fat in the second is 1.29 times that in the first; the amount of fat in 100 pounds of the third cheese is 1.45 times that in the first, etc. If the increase of fat in the cheese were uniform with the increase of fat in the milk, the two sets of numbers would be the

same. In the second experiment, both numbers would be 1.28, if the increase of fat in the cheese were uniform with the increase of fat in the milk. Instead of 1.28, the increase of fat in the cheese is represented by 1.29; that is, the cheese contains a little more fat than we should expect, if the increase were uniform. In the other experiments, the difference is in the other direction; that is, the fat in the cheese does not increase as rapidly in proportion as does the fat in the milk, the relation between the two sets of numbers tending to grow wider apart as the fat in the milk increases.

2. In the fourth and sixth experiments, in which the Cheddar process was used, we notice that the fat in the cheese is considerably less than in the corresponding experiments, in which the stirred-curd process was employed. The Cheddar process appears to make cheese containing more water and proportionately less fat.

3. Milk containing less than three per cent. of fat would, on the basis of these experiments, make a cheese containing less than thirty per cent of fat. Such a cheese would be below the standard required by law in Wisconsin.

INFLUENCE OF CASEIN AND ALBUMEN IN MILK ON COMPOSITION OF CHEESE.

The figures in the last two columns of the table below are obtained by averaging the different analyses of each cheese.

TABLE SHOWING AMOUNT OF CASEIN AND ALBUMEN IN MILK AND IN CHEESE.

NUMBER OF EXPERIMENT.	Pounds of casein and albumen in 100 lbs. of milk.	Pounds of casein and albumen in cheese from 100 lbs. of milk.	Pounds of casein and albumen in 100 lbs. of cheese.
1	3.34	2.56	27.6
2	2.81	2.27	25.0
3	3.45	2.57	24.9
4	3.81	2.75	23.5
5	3.91	2.78	24.7
6	3.53	2.80	22.7
7	3.24	2.58	22.5
8	3.37	2.29	17.9

Statement of results.

A study of the data in the above table does not reveal any direct or uniform relation between the amount of casein and albumen in milk and the proportion of casein and albumen in 100 parts of cheese. The amount of casein and albumen in the milk is fairly constant, varying only a little over one pound per hundred pounds of milk in all the experiments, from 2.81 to 3.91; and the actual number of pounds of casein and albumen in cheese made from 100 pounds of milk varies only from 2.27 to 2.80 pounds, a little over one-half of a pound. But we see that the proportion of casein and albumen in 100 pounds of cheese varies from 27.6 pounds in the first to 17.9 in the last experiment, a variation of nearly ten pounds. We can, therefore, perceive no relation between the composition of the milk and the composition of the cheese in respect to casein and albumen, if we consider these constituents by themselves. Since we have already seen how preponderating an influence the fat in the milk exercises on the composition of the cheese, we must study the influence of casein and albumen in milk on the composition of cheese in connection with the fat in the milk and in the cheese.

INFLUENCE OF RELATION OF FAT TO CASEIN AND ALBUMEN IN
MILK ON COMPOSITION OF CHEESE.

Rearranging data already presented in previous tables we have the following table:

NUMBER OF EXPERI- MENT.	Pounds of casein and albumen in cheese from 100 lbs. of milk.	Pounds of fat in cheese from 100 lbs. of milk.	Pounds of casein and albumen in 100 lbs. of cheese.	Pounds of fat in 100 lbs. of cheese.	Pounds of fat for one lb. of casein and albumen in milk.
1.....	2.56	2.20	27.6	23.7	0.70
2.....	2.27	2.73	25.0	30.6	1.07
3.....	2.57	3.56	24.9	34.5	1.12
4.....	2.75	3.56	23.5	30.4	1.04
5.....	2.78	4.04	24.7	35.9	1.20
6.....	2.80	4.33	22.7	34.5	1.34
7.....	2.58	4.47	22.5	39.0	1.48
8.....	2.29	5.73	17.9	44.6	1.92

In examining the above table, we notice the following facts :

1. The pounds of casein and albumen in the cheese from 100 pounds of milk is fairly constant, varying only about one-half of a pound in all the experiments.

2. The pounds of fat in the cheese from 100 pounds of milk constantly increases from the first to the last experiment, increasing from 2.20 to 5.73 pounds, a variation of over 3.5 pounds.

3. Since the amount of fat constantly increases and the amount of casein and albumen remains nearly the same, there will be in the different cheeses less casein and albumen in proportion to the fat ; that is, the amount of casein in 100 pounds of cheese will decrease, relatively, as the amount of fat increases. This is clearly indicated in the fourth and fifth columns of the above table.

4. The proportion of casein and albumen in cheese depends upon the amount of casein and albumen relative to the amount of fat in the milk, and not upon the amount of casein and albumen taken alone. Thus, in the first experiment, the amount of casein and albumen in the milk is 3.34 pounds per hundred, while the fat is only 2.35 pounds in amount ; that is, for one pound of casein and albumen in milk, there is only .7 pounds of fat. In the cheese made from this milk we find the amount of casein highest of all. In the eighth experiment, the amount of casein and albumen is about the same as in the first case ; the amount of fat, however, is nearly twice as much, and, in the cheese made from this milk, we find the amount of casein and albumen least. A comparison of the fourth and last columns in the above table shows clearly that as the amount of fat in the milk increases relative to the casein and albumen, the proportion of casein and albumen in the cheese diminishes.

While we can say, roughly, what per cent. of fat cheese will contain, if we know the per cent. of fat in a normal milk, we can not tell at all what per cent. of casein and albumen cheese will contain from knowing only the per cent. of these constituents in the milk.

5. Attention is called to the fact that the highest amount of casein in any cheese is 27.6 pounds per hundred, and this was made from milk containing a proportion of ten pounds of casein

and albumen to seven pounds of fat, a large excess of casein and albumen, which would not be found often in normal milk. It is often stated that good cheese should consist of about one-third water, one-third fat and one-third casein. If this statement is true, the inquiry is pertinent here, what kind of milk would be required to make cheese consisting of one-third casein, when milk containing less than 2.5 per cent. fat, with an excess of casein and albumen, makes cheese containing less than twenty-eight per cent. of casein?

SUMMARY OF RESULTS RELATING TO INFLUENCE OF COMPOSITION OF MILK ON COMPOSITION OF CHEESE.

1. *Fat.*

a. The proportion of fat in the cheese showed a tendency to increase, but not uniformly, when the amount of fat in the milk increased. There were about twenty-four pounds of fat in 100 pounds of cheese made from the skim-milk, while 100 pounds of the cheese made from the milk richest in fat contained about forty-five pounds of fat.

b. Under the conditions of manufacture employed, cheese containing thirty pounds of fat per hundred pounds of cheese could not be made from milk containing less than three per cent. of fat.

c. The fat exercised a greater influence on the composition of the cheese than any other constituent of the milk.

2. *Casein and albumen.*

a. There appeared to be no relation between the amount of casein and albumen in the milk and the amount of casein and albumen in 100 pounds of cheese.

3. *Composition of cheese as influenced by the proportion of fat to casein and albumen in milk.*

a. When the casein and albumen were present in the milk in largest quantities relative to the fat, the proportion of casein was greatest in the cheese; and when the fat in the milk was greatest relative to the casein and albumen, the casein in the cheese was least.

VII. INFLUENCE OF COMPOSITION OF MILK ON YIELD OF CHEESE.

Under this head, we shall consider the following subjects :

1. Influence of fat in milk on yield of cheese.
2. Influence of casein and albumen in milk on yield of cheese
3. Amount of milk required to make one pound of cheese.
4. Summary of results.

INFLUENCE OF FAT IN MILK ON YIELD OF CHEESE.

In the following table, the amount of cheese made from 100 pounds of milk is calculated as cheese five weeks old. The figures under "pounds of fat in cheese from 100 pounds of milk" are based upon the average of all the analyses of each cheese.

TABLE SHOWING RELATION OF FAT IN MILK TO YIELD OF CHEESE.

NUMBER OF EXPERIMENT.	Pounds of marketable cheese made from 100 lbs. of milk.	Pounds of fat in 100 lbs. of milk.	Pounds of fat in cheese from 100 lbs. of milk.	Pounds of casein, water, etc., in cheese from 100 lbs. of milk.
1	9.05	2.35	2.20	6.85
2	8.86	3.01	2.73	6.13
3	10.11	3.88	3.56	6.55
4	11.25	3.96	3.56	7.69
5	11.07	4.70	4.04	7.03
6	12.12	4.73	4.33	7.79
7	11.12	4.80	4.47	6.65
8	12.52	6.49	5.73	6.79

Statement of results.

1. In the experiments described in this report, the increase in the yield of cheese was due to increase of fat in milk more than to any other constituent of the milk.

In the foregoing table, it is noticeable that the yield of cheese increases, in most cases, when the fat in the milk increases. Is this increase of yield in cheese due alone to increase of fat in milk? We can answer this question more clearly by rearranging the data presented in the above table, in the following manner :

NUMBER OF EXPERI- MENT.	YIELD OF CHEESE FROM 100 LBS. OF MILK.		Pounds of fat in cheese from 100 lbs. of milk.— Increase of fat in cheese.	POUNDS OF CASEIN, WATER, ETC., IN CHEESE FROM 100 LBS. OF MILK.	
	Increase of yield.	Decrease of yield.		Increase.	Decrease.
1.....	.....	.....	.....	.....	.....
2.....	.....	0.19	0.53	.....	0.72
3.....	1.06	.....	1.36	.....	0.30
4.....	2.20	.....	1.36	0.84	.....
5.....	2.02	.....	1.84	0.18	.....
6.....	3.07	.....	2.13	0.94	.....
7.....	2.07	.....	2.27	.....	0.20
8.....	3.47	.....	3.53	.....	0.06

The yield of cheese in the first experiment is taken as a starting point, and is compared with each following experiment; where the yield is greater than in the first cheese, the difference or increase is placed in the second column; where there is a less yield than in the first case, the difference or decrease is placed in the third column. Thus, in the second experiment, the yield was 0.19 pounds less than in the first; in the third the yield was 1.06 pounds greater than in the first; in the fourth, the yield of cheese was 2.20 pounds greater than in the first, etc. The next column gives the increase of fat in the cheese. Thus, the second cheese contained .53 pounds fat more than the first; the third, 1.36 pounds fat more than the first, etc. The last two columns show the difference of decrease and increase in amount of casein, water, etc., of the various cheeses as compared with the first. Thus, the second, third, seventh and eighth cheeses contain a smaller amount of casein, water, etc., than the first cheese, while the fourth, fifth and sixth cheeses contain more casein, water, etc., than the first.

Comparing the first and second experiments, we see that the yield of cheese diminished .19 pounds, while the fat increased .53 pounds. Then we see that the casein, water, etc., decreased .72 pounds, so the loss in yield was due to an excessive loss of casein, water, etc., the increase of fat being insufficient to overcome the large loss of water, casein, etc.; hence there was a decrease in yield.

Comparing the first and third experiments, the yield of cheese increased 1.06 pounds, while the fat increased 1.36 pounds, and the other constituents decreased .30 pounds. Hence, in this case, the

increased yield was entirely due to the increase of fat. The same is true in the seventh and eighth experiments as compared with the first; there was an actual decrease of the constituents not fat so that whatever increase there was, was due to increase of fat. In the fourth, fifth and sixth experiments, the increased yield of cheese was due to the increase of both fat and of other constituents, but the greatest part of the increase was due to increase of fat.

As already pointed out, the increase of fat in the cheese is due to increase of fat in the milk; hence the increase of yield of cheese, which has just been shown to be largely dependent upon increase of fat in the cheese, is largely dependent upon an increase of fat in milk.

It will be noticed that in the fourth and sixth experiments, in which the Cheddar process was used, the increase of yield was more largely due to increase in yield of constituents not fat than in any other case. To what extent this increase is due to casein, we will notice later.

INFLUENCE OF CASEIN AND ALBUMEN IN MILK ON YIELD OF CHEESE.

NUMBER OF EXPERI- MENT.	Pounds of marketable cheese made from 100 pounds of milk.	Pounds of casein and albumen in 100 pounds of milk.	Pounds of casein and albumen in cheese from 100 pounds of milk.	Pounds of fat in cheese from 100 pounds of milk.	Pounds of water, ash, etc., in cheese from 100 pounds of milk.
1.....	9.05	3.34	2.56	2.20	4.29
2.....	8.86	2.81	2.27	2.73	3.86
3.....	10.11	3.45	2.57	3.56	3.98
4.....	11.25	3.81	2.75	3.56	4.94
5.....	11.07	3.91	2.78	4.04	4.25
6.....	12.12	3.53	2.80	4.33	4.99
7.....	11.12	3.24	2.58	4.47	4.07
8.....	12.52	3.37	2.29	5.73	4.50

1. The influence of the casein and albumen in the milk upon increase or decrease in yield of cheese is slight as compared with the influence of the fat.

While the above table does not show most clearly the truth of the foregoing statement, we can, by rearranging the data, present them in such a way as to show the fact stated.

NUMBER OF EXPERIMENT.	YIELD OF CHEESE FROM 100 POUNDS OF MILK.		POUNDS OF CASE- IN AND ALBU- MEN IN CHEESE FROM 100 POUNDS OF MILK.		Pounds of fat in cheese from 100 pounds of milk.— Increase of fat in cheese.	POUNDS OF WATER, ASH, ETC., IN CHEESE FROM 100 POUNDS OF MILK.	
	of Increase yield.	of Decrease yield.	of Increase casein cheese.	of Decrease casein cheese.		Increase of water, etc., in cheese.	Decrease of water, etc., in cheese.
1. ....	.....	.....	.....	.....	.....	.....	.....
2. ....	.....	0.19	.....	0.29	0.53	.....	0.43
3.	1.06	.....	0.01	.....	1.36	.....	0.31
4.	2.20	.....	0.19	.....	1.36	0.65	.....
5.	2.02	.....	0.22	.....	1.84	.....	0.04
6.	3.07	.....	0.24	.....	2.13	0.70	.....
7.	2.07	.....	0.02	.....	2.27	.....	0.22
8.	3.47	.....	.....	0.27	3.53	0.21	.....

In the foregoing table, the yield of cheese in the first experiment is taken as a starting point, and is compared with the yield in each of the following experiments; where the yield is greater than in the first cheese, the difference or increase is placed in the second column; where there is a yield less than in the first case, the difference or decrease is placed in the next column. Thus, in the second experiment, the yield of cheese was 0.19 pounds less than in the first; in the third the yield was 1.06 pounds greater than in the first; in the fourth case, the yield was 2.20 pounds greater than in the first case, etc. The fourth and fifth columns, in a similar manner, give the amount of increase or decrease of casein and albumen in each cheese, as compared with the first. Thus, the second and eighth cheeses contained less, while the others contained more casein and albumen than the first cheese. The sixth column gives the increase of fat in each cheese over the fat in the first cheese. The last two columns give, in a similar manner, the increase and decrease of the remaining constituents of the cheese, chief of which is water; the second, third, fifth and seventh cheeses contain less water, etc., than the first cheese, while the other cheeses contain more.

Comparing the first and second experiments, we see that the yield of cheese was diminished 0.19 pounds. This loss of yield was caused by a decrease of 0.29 pounds of casein and albumen

and 0.43 pounds of water, etc. The fat increased 0.53 pounds, but the loss of the other constituents was 0.19 pounds greater than this gain of fat. If the casein had remained the same as in the first experiment, there would have been a slight increase in the yield of cheese. The decrease in the amount of casein was due to the fact that the milk contained about one-half a pound less of casein and albumen than in the first experiment. Though the decrease in casein and albumen here is considerable, it does not exercise so great an influence on the diminished yield of cheese as does the decrease of water.

Comparing the first and third experiments, the yield of cheese increased 1.06 pounds. Of this amount of increase, we can credit only .01 pounds to the casein and albumen, the rest being due to increase of fat; there was a decrease in water, etc.

If, in a similar manner, we compare each of the succeeding experiments with the first, we see, first, that the increase or decrease in yield of cheese is, in every case, dependent very much less upon the casein and albumen than upon the fat; and, second, that the amount of water exercises a greater influence on increase or decrease of yield of cheese than do the casein and albumen.

2. It will be noticed, that, in the fourth and sixth experiments, in which the Cheddar process was employed, there was an increased yield of cheese, due, more largely, than in other cases, to the increase of casein and albumen and water retained in the cheese.

AMOUNT OF MILK REQUIRED TO MAKE ONE POUND OF CHEESE.

The accompanying table states the amount of milk required to make one pound of cheese, taking each cheese when it is green and then when it is one, three and five weeks old. As a cheese loses weight from week to week, the amount of milk equivalent to one pound of the same cheese, as it becomes older and lighter, must become proportionately greater. Probably the figures under the fifth week after manufacture more nearly represent the condition of the cheese when it becomes marketable. The figures are based upon the actual weights of the cheese, no allowance being made for variation in the amount of water in the cheese. As will be noticed later, the loss of weight in the different cheeses is not quite uniform.

TABLE SHOWING POUNDS OF MILK REQUIRED TO MAKE ONE POUND OF CHEESE.

NUMBER OF EXPERIMENT.	When cheese was green.	When cheese was one week old.	When cheese was three weeks old.	When cheese was five weeks old.
1	10.23	10.50	10.79	11.05
2	10.34	10.71	11.01	11.29
3	9.15	9.48	9.69	9.89
4	8.19	8.42	8.70	8.89
5	8.44	8.73	8.90	9.03
6	7.64	7.85	8.08	8.25
7	8.16	8.38	8.76	8.99
8	7.28	7.54	7.81	7.99

From what has gone before, we can account for the changes in the amount of milk required to make one pound of cheese.

1. As a rule, less milk was required for one pound of cheese, when the amount of fat in the milk increased.

In the second experiment more milk is required than in the first, although the fat is greater in the second case. This, we have seen, is due to two facts, (1st) that the second milk contained less casein and albumen; and (2d) that the cheese in the second case retained a smaller proportion of water.

2. As between the third and fourth experiments, the fourth cheese made by the Cheddar process required less milk for a pound of cheese, because the resulting cheese contained a larger proportion of water; the fat recovered being the same in both experiments. In the sixth experiment, where the Cheddar process was also employed, the loss of fat was less, and also the cheese retained more water than in the case of the stirred-curd cheeses, made in experiments five and seven from milk containing approximately the same amount of fat.

SUMMARY OF RESULTS RELATING TO INFLUENCE OF COMPOSITION OF MILK ON YIELD OF CHEESE.

1. *Fat.*

a. The yield of cheese increased when the amount of fat in the milk increased, but not uniformly so.

b. In three experiments the increased yield of cheese was *wholly* due to increase of fat in the milk; while, in the other experiments, the increased yield was *mainly* due to increase of fat in milk.

2. Casein and albumen.

a. In several experiments, the amount of casein and albumen in the milk exercised no influence whatever upon the increase of yield, while, in other cases, its influence was small as compared with that of the fat and less, even, than the influence of the water that was retained.

VIII. COMPARISON OF CHEDDAR AND STIRRED-CURD PROCESSES OF MANUFACTURE.

As previously stated, two trials were made to compare the Cheddar and stirred-curd processes. In one comparison, milk containing 3.88 and 3.96 per cent of fat was used; in the other, milk containing 4.70 and 4.73 per cent of fat. We shall compare the two processes with reference to —

1. Amount of fat lost and recovered.
2. Amount of casein and albumen lost and recovered.
3. Composition of cheese as influenced by Cheddar and stirred-curd processes.
4. Yield of cheese.
5. Summary of results.

AMOUNT OF FAT LOST AND RECOVERED IN CHEDDAR AND STIRRED-CURD PROCESSES.

KIND OF CHEESE.	Pounds of fat in 100 lbs. of milk.	Pounds of fat lost in 100 lbs. of milk.	Pounds of fat recovered in 100 lbs. of milk.	Pounds of fat lost in whey from 100 lbs. of fat in milk.	Pounds of fat recovered in green cheese from 100 lbs. of fat in milk.
Stirred-curd .	3.88	0.277	3.603	7.15	92.85
Cheddar . . .	3.96	0.283	3.677	7.14	92.86
Stirred-curd .	4.70	0.359	4.341	7.64	92.36
Cheddar . . .	4.73	0.331	4.399	6.99	93.01

Statement of results.

1. In the first comparison made between the Cheddar and stirred-curd processes, the actual amount as well as the proportion of fat lost is practically the same in both cases.

2. In the second comparison, the Cheddar process gave considerably less loss. That the difference in favor of the Cheddar process in this case was due to the Cheddar process we can not say; changes due to variation of other conditions in the process of manufacture may have made the difference. Further experiments must be made before we can reach reliable conclusions in regard to the loss of fat in the Cheddar process as compared with the stirred-curd process.

AMOUNT OF CASEIN AND ALBUMEN LOST AND RECOVERED IN CHEDDAR AND STIRRED-CURD PROCESSES.

KIND OF CHEESE.	Pounds of casein and albumen in 100 lbs. of milk.	Pounds of casein and albumen recovered in 100 lbs. of milk.	Pounds of casein and albumen lost in 100 lbs. of milk.	Pounds of casein and albumen lost in whey from 100 lbs. of casein and albumen in milk.	Pounds of casein and albumen recovered in cheese from 100 lbs. of casein and albumen in milk.
Stirred-curd..	3.45	2.52	0.93	27.06	72.94
Cheddar ...	3.81	2.89	0.92	24.18	75.82
Stirred-curd..	3.91	2.86	1.05	26.78	73.22
Cheddar	3.53	2.90	0.63	17.93	82.07

Statement of results.

1. In the first comparison, the actual amount of casein lost was about the same, but the actual amounts present in the milk were quite different, 3.45 and 3.81, and so the actual amount recovered in the cheese was greater in the case of the milk containing the larger amount of casein and albumen. However, if we consider the *proportion* of casein and albumen lost, we see that about three per cent. less was lost in the case of the Cheddar.

2. In the second comparison, the conditions were reversed since the milk used in making the stirred-curd cheese contained the larger amount of casein and albumen. The actual amounts recovered were nearly the same, and the actual amounts lost were quite different, being 1.05 in the stirred-curd process, and 0.63 in the Cheddar. Taking the *proportion* lost, we see that of the amount of casein and albumen in the milk, nine per cent less was lost in the case of the Cheddar process.

3. Though, in both trials of comparison, the proportion of casein and albumen in milk lost was less in the Cheddar process,

it is impossible to say that these differences were not due to variations in the process of manufacture that did not relate directly to differences between the Cheddar and stirred-curd processes.

COMPOSITION OF CHEESE AS INFLUENCED BY CHEDDAR AND STIRRED-CURD PROCESSES.

KIND OF CHEESE.	Pounds of fat in 100 pounds of milk.	Pounds of fat in 100 pounds of cheese.	Pounds of water in 100 pounds of cheese.	Pounds of casein in 100 pounds of cheese.
Stirred-curd.....	3.88	34.5	34.8	24.9
Cheddar	3.96	30.4	37.8	23.5
Stirred-curd.....	4.70	35.9	33.4	24.7
Cheddar	4.73	34.5	37.4	22.3

Statement of results.

1. In each case of comparison, the Cheddar process produced a cheese containing less fat than the cheese made by the stirred-curd process.

2. In both cases of comparison the cheese made by the Cheddar process contained more water, per hundred pounds of cheese than that made by the stirred-curd process.

3. In both trials of comparison the cheese made by the Cheddar process contained less casein, per hundred pounds of cheese, than that made by the stirred-curd process.

YIELD OF CHEESE AS INFLUENCED BY THE CHEDDAR AND STIRRED-CURD PROCESS.

KIND OF CHEESE.	Pounds of marketable cheese made from 100 pounds of milk.	Pounds of casein and albumen in 100 pounds of milk.	Pounds of casein and albumen in cheese from 100 pounds of milk.	Pounds of fat in 100 pounds milk.	Pounds of fat in cheese from 100 pounds of milk.	Pounds of water, ash, etc., in cheese from 100 pounds of milk.
Stirred-curd.	10.11	3.45	2.57	3.88	3.56	3.98
Cheddar	11.25	3.81	2.75	3.96	3.56	4.94
Stirred-curd.	11.07	3.91	2.78	4.70	4.04	4.25
Cheddar	12.12	3.53	2.80	4.73	4.33	4.99

Statement of results.

1. An examination of the first trial of comparison shows that the Cheddar process made 1.14 pounds more of cheese from 100 pounds of milk than did the stirred-curd process. This increased yield was made up as follows: (1) 0.18 pounds of casein and albumen and (2) 0.96 pounds of water, ash, etc., there being no change in fat.

2. An examination of the second trial of comparison shows that the Cheddar process made 1.05 pounds more of cheese from 100 pounds of milk than did the stirred-curd process. This increased yield was made up as follows: (1) 0.02 pounds of casein and albumen, (2) 0.29 pounds of fat and (3) 0.74 pounds of water, ash, etc.

3 Other conditions remaining the same, it appears that the Cheddar process will yield a larger amount of cheese than the stirred-curd process, and the increased yield is mainly due to the fact that by the Cheddar process a larger amount of moisture is retained in the cheese.

SUMMARY OF RESULTS RELATING TO COMPARISON OF THE CHEDDAR
AND STIRRED-CURD PROCESSES.

1. *Loss of milk-constituents in Cheddar process.*

a. *Fat.* In one case, when the milk contained about four per cent. of fat, the proportion of fat lost was the same in both processes; in the other case, when the milk contained nearly five per cent. of fat, the loss of fat was less in the Cheddar process.

b. *Casein and albumen.* In one case, the loss of casein and albumen was three per cent. less in the Cheddar process than in the stirred-curd process, while, in the other case, the loss by the Cheddar process was seven to nine per cent. less than in the stirred-curd process. The causes of these differences were probably due to variations of conditions not, in any way, related to these processes.

2. *Influence of Cheddar process on composition of cheese.*

a. *Fat.* The cheese made by the Cheddar process contained a larger proportion of water and a correspondingly smaller proportion of fat than the cheese made by the stirred-curd process.

b. *Casein and albumen.* The increase of water retained in the cheese by the Cheddar process caused a corresponding diminution in the proportion of casein and albumen in the cheese.

3. *Influence of Cheddar process on yield of cheese.*

a. In both trials the Cheddar process made a larger amount of marketable cheese, producing one pound more of cheese from 100 pounds of milk than did the stirred-curd process.

IX. COMPARISON OF COMMERCIAL AND HOME-MADE RENNET-EXTRACT.

A single trial was made to compare the results of using commercial rennet-extract (Hansen's) with those obtained by using home-made rennet-extract. A single trial must, of course, be valueless for arriving at definite conclusions, but the results are presented for what they are worth. The results will be presented under the following heads:

1. Amount of fat lost and recovered.
2. Amount of casein and albumen lost and recovered.
3. Composition of cheese.
4. Yield of cheese.
5. Summary of results.

AMOUNT OF FAT LOST AND RECOVERED IN USING COMMERCIAL AND HOME-MADE RENNET-EXTRACT.

KIND OF RENNET-EXTRACT USED.	Pounds of fat in 100 lbs. of milk.	Pounds of fat lost in 100 lbs. of milk.	Pounds of fat recovered in 100 lbs. of milk.	Pounds of fat lost in whey from 100 lbs. of fat in milk.	Pounds of fat recovered in green cheese from 100 lbs. of fat in milk.
Commercial..	4.70	0.359	4.341	7.64	92.36
Home-made..	4.80	0.373	4.427	7.77	92.23

Statement of results.

1. The actual amount, as well as the proportion, of fat lost and recovered was practically the same in both cases.

AMOUNT OF CASEIN AND ALBUMEN LOST AND RECOVERED IN USING
COMMERCIAL AND HOME-MADE RENNET-EXTRACT.

KIND OF RENNET-EXTRACT USED.	Pounds of casein and albumen in 100 lbs. of milk.	Pounds of casein and albumen recovered in 100 lbs. of milk.	Pounds of casein and albumen lost in 100 lbs. of milk.	Pounds of casein and albumen lost in whey from 100 lbs of casein and albumen in milk.	Pounds of casein and albumen recovered in cheese from 100 lbs. of casein and albumen in milk.
Commercial ..	3.91	2.86	1.05	26.78	73.22
Home-made..	3.24	2.43	0.81	24.97	75.03

Statement of results.

1. In using the home-made rennet-extract, nearly one-quarter of a pound less of casein and albumen was lost for 100 pounds of milk than in using the commercial extract; but this difference was probably due to variations in other conditions of manufacture rather than to any difference in the action of home-made and commercial extract.

COMPOSITION OF CHEESE AS INFLUENCED BY USE OF COMMERCIAL
AND HOME-MADE RENNET-EXTRACT.

KIND OF RENNET-EXTRACT USED.	Pounds of fat in 100 lbs. of cheese.	Pounds of water in 100 lbs. of cheese.	Pounds of casein in 100 lbs of cheese.
Commercial.....	35.9	33.4	24.7
Home-made	39.0	35.9	22.5

Statement of results.

1. In the cheese made by using commercial rennet-extract, the proportion of fat and water was less, and the proportion of casein was more, than in the case where the home-made extract was used. But it is safe to say that these differences were not connected with the kind of rennet-extract used, but were due to differences in other conditions.

YIELD OF CHEESE AS INFLUENCED BY THE USE OF COMMERCIAL AND HOME-MADE RENNET-EXTRACT.

KIND OF RENNET-EXTRACT USED.	Pounds of marketable cheese made from 100 lbs. of milk.	Pounds of casein and albumen in 100 lbs. of milk.	Pounds of casein and albumen in cheese from 100 lbs. of milk.	Pounds of fat in 100 lbs. of milk.	Pounds of fat in cheese from 100 lbs. of milk.	Pounds of water, ash, etc., in cheese from 100 lbs. of milk.
Commercial..	11.07	3.91	2.78	4.70	4.04	4.25
Home-made .	11.12	3.24	2.58	4.80	4.47	4.07

Statement of results.

1. The yield of marketable cheese from one hundred pounds of milk was practically the same in both cases, though, as already pointed out, the composition of the cheese varied.

SUMMARY OF RESULTS RELATING TO COMPARISON OF COMMERCIAL AND HOME-MADE RENNET-EXTRACT.

In the two experiments, in which comparison was made, no difference, in any respect, could be noticed that could be attributed to difference in the rennet-extract used.

X. CHANGES TAKING PLACE IN THE RIPENING OF CHEESE.

CHEMICAL CHANGES OF THE RIPENING PROCESS.

The chemical changes that take place in the process of ripening of cheese are not very well understood in detail. According to Blyth, they are somewhat as follows :

1. There is a continuous loss of water.
2. There is a slow development of carbon dioxide, resulting from the decomposition of casein or fat, or both.
3. The glycerides of the fat decompose, setting free the fatty acids, especially the volatile fatty acids.
4. The nitrogen compounds, chief of which is casein, gradually decompose, the nitrogen taking the form of ammonia. Hence, old cheese has an alkaline reaction, while fresh cheese is acid.
5. The ammonia thus formed unites with the fatty acids that have been set free, and forms ammonium salts of these acids, as

ammonium butyrate, ammonium caproate, etc. Also calcium salts of these acids are formed.

6. The casein, so far as it is not decomposed, slowly passes into a soluble condition.

CAUSE OF CHEMICAL CHANGES IN THE RIPENING OF CHEESE.

The chemical changes that take place when cheese ripens are due to the action of bacteria. These bacteria get into the cheese by way of the milk, and they get into the milk from the air, the bodies of cows, the hands of milkers, and all unclean utensils used in storing the milk — in fact, they may come from anything and everything with which the milk chances to come into contact from the time it leaves the cow's udder up to the time it is put into the cheese-press. The nitrogen-compounds of the cheese, as well as the other constituents, furnish an extremely favorable medium for the development of bacteria, other conditions being favorable. The bacteria in some way cause the casein, the albumen, the fat, and the sugar to undergo certain changes, producing new chemical compounds and these new chemical compounds give to the cheese the characteristic taste due to what we call ripening. If the bacteria act more rapidly or for a longer period of time, these products of bacterial action become greater in quantity and the cheese acquires a stronger flavor.

Different bacteria produce different changes, and even the same kind of bacteria, under different conditions, are believed to produce different changes. Hence in the ripening of cheese, we have different results produced, according as certain kinds of bacteria develop more abundantly. Certain bacteria, whether one particular kind or more we can not yet say positively, produce the flavor which the market demands and which may be said to be the result of the natural ripening process. Either these same bacteria under other conditions or other bacteria under conditions suited best to their development often give rise to products that are offensive and that render the cheese worthless. In the present method of ripening cheese, the process is difficult to control, because we do not, at the outset, know what kinds of bacteria we have to deal with in our cheese. It is not improbable that in the near future we shall greatly modify our methods of cheese-making by sterilizing the milk to start with; that is, by destroying all

the bacteria that chance to be in the milk, and then adding, in pure form, those bacteria that have been found to produce the desired effect. This method has already been employed in the ripening of cream for butter-making and the desirable bacteria, in pure form, have already been or soon will be placed upon the market.

In connection with the chemical changes of the ripening of cheese, the following points will be noticed briefly :

1. Total loss of weight in ripening.
2. Influence of ripening on fat.
3. Influence of ripening on casein.
4. Influence of ripening on its acidity.
5. Summary of results.

TOTAL LOSS OF WEIGHT IN THE RIPENING OF CHEESE.

The figures in the first three columns of the table below are based upon the actual weights of the cheese taken at the different intervals mentioned, reckoning from the weight of the green cheese in each case.

TABLE SHOWING LOSS OF CHEESE IN WEIGHT IN ONE, THREE, AND FIVE WEEKS.

NUMBER OF EXPERIMENT.	POUNDS LOST IN WEIGHT FOR 100 POUNDS OF CHEESE.			Pounds of fat in 100 pounds of cheese.	Pounds of water in 100 pounds of cheese.	Thickness of each cheese in inches.
	In one week.	In three weeks.	In five weeks.			
1	2.55	5.19	7.45	23.7	42.0	7.5
2	3.45	6.03	8.42	30.6	37.0	4.5
3	3.54	5.56	7.49	34.5	34.8	5.0
4	2.84	5.92	7.91	30.4	37.8	5.8
5	3.37	5.18	6.58	35.9	33.4	6.0
6	2.75	5.44	7.44	34.5	37.4	6.5
7	2.73	6.98	9.30	39.0	35.9	6.3
8	3.43	6.85	8.87	44.6	32.2	7.0

The different cheeses vary in the amount of loss in weight, for the first five weeks, from 6.58 pounds to 9.30 pounds for each

hundred pounds of cheese. This is a somewhat larger proportion of loss than is common in factories. It is probably accounted for by the fact that, during the first two weeks after the cheeses were made, the weather was extremely warm and there was no suitable place for storing the cheese at the time, so that they were not at this time kept at an even temperature. After the first month, the cheeses were placed in a room of fairly uniform temperature and kept at 60° to 65° F. They were turned daily.

The cheeses that contained the largest amount of fat were, in two instances, the ones to lose the most weight, though the loss in most cases does not vary with the fat. The water contained in the cheese also appears to be in no way connected with the loss of weight. The cheese containing the largest proportion of water did not lose most, nor did the one containing least water lose least weight. The thickness of the cheese does not appear to be connected with the loss of weight. The cheeses were of uniform diameter, but varied, as shown in the table, in the thickness. Cheeses of the same thickness lost quite different weights. The loss of weight was not uniform from week to week but shows considerable variation.

INFLUENCE OF THE RIPENING OF CHEESE ON THE FAT.

There are two sources of loss or change in the fat contents of cheese in the process of ripening, (1st) *mechanical*, (2d) *chemical*.

1. In the first stages of ripening it is a familiar sight to see the outside of a cheese covered with fat that has exuded from the cheese, especially if the amount of fat in the cheese is large and if the cheese is stored in a room where the temperature is rather high. This loss of fat is what we may call *mechanical* as distinguished from *chemical*. Owing to the difficulty, previously mentioned, of securing samples of cheese to represent fairly the composition of the whole cheese, the data furnished by analysis of the cheese are not satisfactory and are of practically no value in this connection. As the figures do not give us any real information in regard to the changes of fat due to mechanical loss, they are not presented here. We can say, in general, that during the first five weeks of ripening, there was a loss of fat, as shown by analysis.

2. The *chemical* changes due to the ripening of cheese are mainly a decomposition of the fats with the formation of free fatty

acids. These changes occur mainly after the earlier stages of ripening. No determinations of the amount of free fatty acids have been made up to date, but they will be made in the future analyses of the cheese.

INFLUENCE OF THE RIPENING OF CHEESE ON CASEIN.

The casein in cheese undergoes various changes, forming, among other products, ammonia and soluble nitrogen compounds, which are probably peptones.

About thirty years ago, Blondeau, a French chemist, and some others claimed that, in the ripening of cheese, the casein slowly changed into fat. Müller, Sieber and Brassier have, however, shown that such a change does not take place. It is not uncommon, even in some of our standard authorities on physiology to-day, to see the erroneous conclusions of Blondeau referred to as undisputed facts.

The nitrogen determinations made in the cheese under experiment were, for the first five weeks, (1st) the total casein, etc., and (2d) the proportion of nitrogen compounds soluble in water. In these determinations, the same difficulty of sampling was found, as already mentioned. In some cases, the different samples appeared to show an increase of casein, which could be accounted for only on the ground of a real difference in the samples analyzed. In some cases, there was little change from week to week, while in others, there was a decrease in the amount of casein.

The soluble portion was determined by agitating about two grams of cheese with cold water, in the proportion of 100 parts of water to one cheese. The insoluble portion was filtered off, washed, and then digested by the Kjeldahl method for nitrogen determination. The soluble portion was thus determined by difference. While the results are not entirely concordant, they are of considerable interest in this connection. In the table below we present the data in two forms, giving first, the actual number of pounds of soluble nitrogen compounds in 100 pounds of cheese; and, second, the proportion of the total nitrogen compounds that were soluble in water.

NUMBER OF EXPERIMENT.	POUNDS OF SOLUBLE NITROGEN COMPOUNDS IN 100 POUNDS OF CHEESE.				POUNDS OF SOLUBLE NITROGEN COMPOUNDS IN 100 POUNDS OF TOTAL CASEIN, ETC.			
	In green cheese.	In cheese at seven days.	In cheese at twenty-one days.	In cheese at thirty-five days.	In green cheese.	In cheese at seven days.	In cheese at twenty-one days.	In cheese at thirty-five days.
1 .....	....	4.85	4.16	5.67	....	17.6	15.5	19.7
2 .....	....	2.97	2.78	5.64	....	12.8	11.4	20.1
3 .....	....	6.51	5.39	6.02	....	26.7	21.8	23.5
4	1.57	0.89	5.38	5.70	6.9	3.9	22.1	24.0
5 .....	..	3.93	5.65	4.12	....	16.2	22.8	16.5
6	1.14	1.90	4.56	4.11	5.8	8.8	19.3	19.5
7 .....	....	....	5.77	7.06	....	....	25.6	30.0
8 .....	....	1.19	5.57	6.48	....	6.9	31.7	35.1

We notice the following points of interest :

1. In the fourth and sixth experiments, in which the cheese was analyzed as soon as taken from the press, we see that the amount of nitrogen compounds soluble in water is 1.57 and 1.14 per cent of the cheese. This, doubtless, represents the amount of albumen of the milk which was retained mechanically in the cheese. This constitutes six or seven per cent of the nitrogen compounds (the casein and albumen together) in the green cheese.

2. There appears to be a general tendency in the soluble nitrogen compounds to increase in quantity as the cheese becomes older.

3. If we examine the last two columns in the above table we can see that there appears to be a tendency for the nitrogen compounds to become soluble more rapidly in those cheeses that contain the largest amount of fat. Leaving out the fifth and sixth experiments, the tendency appears to be quite marked. In the first cheese the fat was least; in the seventh and eighth, most; in the first cheese the proportion of soluble nitrogen compounds is least, while in the eighth case it is most; and intermediate in the other cases.

If future work should prove that this is a general tendency in the ripening of cheese, it would have a very important bearing upon the question of skim-cheese and rich cheese. The more

rapidly the insoluble casein becomes soluble, the more easily digestible does the cheese become; and if the above tendency is found to hold good in all cases, then it would follow that skim-cheese becomes digestible less rapidly than rich cheese, so far as the nitrogen compounds are concerned.

In our future work on the ripening process, we shall endeavor to make a more detailed study of the character of nitrogen compounds formed in the different stages of ripening.

INFLUENCE OF RIPENING OF CHEESE UPON ITS ACIDITY.

The acids formed in the process of cheese-making, chief of which is lactic acid, are retained, mechanically, to some extent in the cheese.

The method of determining the acidity of the cheese was to agitate a few grams of cheese with water for several minutes, then to filter and titrate the filtrate with standardized sodium hydroxide solution. The results were calculated for lactic acid.

In the table below is given the per cent. of acid in the first and second wheys and in the cheese at different ages:

NUMBER OF EXPERIMENT.	POUNDS OF LACTIC ACID IN 100 POUNDS.		POUNDS OF LACTIC ACID IN 100 POUNDS OF CHEESE.			
	Of the first whey.	Of the second whey.	In green cheese.	In cheese at seven days.	In cheese at twenty-one days.	In cheese at thirty-five days.
1	0.18	.....	.....	1.17	1.06	0.76
2	0.17	0.26	.....	0.69	0.79	0.65
3	0.16	0.26	.....	1.27	0.92	0.72
4	0.17	0.24	0.58	0.46	0.42	0.53
5	0.21	0.30	.....	0.64	0.73	0.54
6	0.16	0.25	0.62	0.52	0.56	0.54
7	0.25	0.39	...	0.70	0.65	0.62
8	0.20	0.29	.....	0.58	0.72	0.51

1. It does not appear from the above table that the amount of acidity in the cheese corresponds with the amount of acidity in the whey of the same cheese. If the treatment were exactly the same in every respect, we should expect to get a more acid cheese in the case where the whey is more acid, and we doubtless should;

but, with differences in treatment, we should not expect to get cheese with the same amount of acidity. In the fourth and sixth experiments, where the Cheddar process was used, the acidity of the cheese was least of all, and considerably less than in the second and third experiments, where the acidity of the wheys was about the same.

2. There is a general tendency, strongly marked, to decreased acidity as the cheese becomes older.

The decreased acidity is probably an indication of the extent of decomposition of casein; the ammonia formed from the casein unites with the free acid and thus diminishes the acidity. Whether, in any case, the conversion of sugar into lactic acid continues to take place in the cheese, we can not say.

CONTINUATION OF THE STUDY OF THE RIPENING OF CHEESE.

The cheeses under experiment will be preserved, and the study of the ripening process will be continued until the cheeses are, at least, a year old. An effort will be made to make the future analyses more detailed, especially as regards the changes in the fatty compounds and the nitrogen compounds.

SUMMARY OF RESULTS RELATING TO THE CHANGES THAT TAKE PLACE IN THE RIPENING OF CHEESE.

1. *Total loss of weight in ripening.*

a. The loss of weight varied, for the first five weeks, from 6.58 pounds to 9.30 pounds for each hundred pounds of cheese.

2. *Changes of fat due to ripening.*

a. There was a mechanical loss of fat, the exact amount of which was difficult to determine.

3. *Changes of casein due to ripening.*

a. There was practically no appreciable loss of casein during the first five weeks.

b. Analysis of two green cheeses indicated between one and two per cent of albumen in the cheese.

c. There appeared to be a general tendency for the insoluble casein to become less in quantity and for the soluble nitrogen compounds to increase.

d. The soluble nitrogen compounds showed a tendency to increase more rapidly in the cheeses containing the larger amounts of fat.

4. *Changes of acidity due to ripening.*

a. The acidity showed a marked tendency to diminish as the cheese became older.

XI. LINES OF WORK IN FUTURE INVESTIGATIONS OF CHEESE.

The present investigation has proved fruitful in furnishing suggestions for future lines of work. Among the points which it is desirable to investigate more fully, we may mention the following:

1. The *maximum loss of fat* that can be regarded as unavoidable in the manufacture of cheese from normal milk, containing different amounts of fat.

2. Whether, under the same conditions of manufacture, there is a *definite relation between the amount of fat in the milk and the proportion of fat in the corresponding cheese*; if there is such a definite relation, what is it?

3. The *cheese-making power or efficiency* of fat in milk for normal milk containing different amounts of fat; that is, the relation of fat in milk to yield of cheese. For example, how much cheese should milk containing three per cent of fat, three and one-half per cent, four per cent, etc., produce?

4. The conditions under which, and the extent to which, casein is lost in cheese-making, and in what manner such loss can be controlled.

5. The relation of casein to albumen in milk.

6. The definite relation, if any exists, between the amount of casein in milk and the proportion of casein in the corresponding cheese.

7. The cheese-making power or efficiency of casein and albumen in milk.

8. In what manner albumen can be incorporated into cheese and a good commercial article produced.

9. In what manner and to what extent, if at all, rennet affects the ripening of cheese.

10. An extended comparison of the stirred-curd and Cheddar processes of manufacture with reference to (1st) the loss of milk constituents, (2d) the composition of the cheese, and (3d) the yield of cheese.

11. What changes occur in the ripening process (*a*) in the composition of the fat, (*b*) in the composition of the casein and albumen, and (*c*) in the sugar.

XII. RESULTS OF INVESTIGATION OF CHEESE APPLIED TO PRACTICAL DAIRY PROBLEMS.

Under this head, we shall treat, in a more or less general way, the following subjects :

1. The common method of paying for milk at cheese factories.
2. The method of paying for milk according to the amount of fat contained in it.
3. Manufacture of whole-milk cheese and skim-milk cheese.
4. Remedy for the chief defect in the present method of judging cheese in open market.
5. Cheese-making and butter-making.

THE COMMON METHOD OF PAYING FOR MILK AT CHEESE FACTORIES.

We will suppose that eight men take milk to a cheese factory, each man furnishing 100 pounds of milk varying in composition according to the milk used in the series of experiments described in this report ; that is, the first man's milk is like that used in the first experiment, the second one's like that used in the second experiment, etc. We will suppose that these milks, mixed together, make the same amount of cheese as when they are separate, though, as a matter of fact, they would probably produce a little more cheese when mixed. As seen in the table below, the amount of marketable cheese made from these milks, 100 pounds of each, is 86.1 pounds. Suppose the cheese sells for 9.85 cents per pound ; that is equivalent to twenty-five cents for each pound of fat in the milk ; the present market price of cheese would probably justify a higher price. The amount of money received for the 86.1 pounds of cheese at 9.85 cents per pound would be eight dollars and forty-eight cents. There are eight men to share it equally, as each contributed the same amount of milk ; hence the share of each would be about one dollar and six cents.

THE METHOD OF PAYING FOR MILK AT CHEESE-FACTORIES ACCORDING TO THE AMOUNT OF FAT IN THE MILK.

First method. We will suppose that the same amount of milk is contributed by each man and that the same amount of cheese is made as in the foregoing instance. We will suppose, as before, that the cheese sells for 9.85 cents per pound, giving as total for the whole amount of cheese eight dollars and forty-eight cents. The entire amount of fat in all the milk is 33.92 pounds. That would make each pound of fat in the milk worth twenty-five cents per pound. Then, by multiplying the pounds of fat contained in the milk contributed by each man, we obtain the amount of money due each, which is shown in the table below.

Second method. Another way would be to find how much cheese one pound of fat in the milk will make. The milks, mixed together make 86.1 pounds of cheese from 33.92 pounds of fat. By dividing the amount of cheese by the amount of fat in the milk, we get the amount of cheese which one pound of fat in the milk actually makes; in this case, there are 2.54 pounds of cheese for each pound of fat in the milk. Now, if we multiply the amount of fat in each milk by 2.54, we find how much cheese it made. This amount of cheese, multiplied by the selling price per pound, will give the same numbers as those obtained by the preceding method.

TABLE ILLUSTRATING METHODS OF PAYING FOR MILK AT CHEESE FACTORIES.

NUMBER OF EXPERIMENT.	Pounds of marketable cheese from 100 lbs. of milk.	Pounds of fat in 100 lbs. of milk.	Value of 100 lbs. of milk paid for by common methods.*	Value of 100 lbs. of milk paid for according to amount of fat in milk.*
1	9.05	2.35	\$1 06	\$0 59
2	8.86	3.01	1 06	0 75
3	10.11	3.88	1 06	0 97
4	11.25	3.96	1 06	0 99
5	11.07	4.70	1 06	1 17
6	12.12	4.73	1 06	1 18
7	11.12	4.80	1 06	1 20
8	12.52	6.49	1 06	1 62

* Calculated on the basis of fat in milk at twenty-five cents per pound, or cheese at an average of 9.85 cents per pound.

In an ordinary cheese factory, the difference in the amount of fat in the milk would, of course, be very much less. Most factory milks in this State probably average between three and four per cent. in fat. It is probable that in actual cheese-factory practice the best milk, paid for on the basis of its fat, would bring about twenty-five cents more per hundred than the milk containing the least fat.

MANUFACTURE OF WHOLE-MILK CHEESE AND SKIM-MILK CHEESE.

Which pays better, the manufacture of skim-milk cheese and butter or the manufacture of whole-milk cheese? This question is far from being a new one, but it may be of interest to try to answer the question in connection with these experiments. While our data are not extended enough to be of practical use in this connection, they may serve as a guide for general discussion. Among the points that must be considered in discussing this question are the following: (1st) Does milk, poor in fat, make more or less cheese in proportion to its per cent of fat than milk richer in fat? (2d) Does cheese made from milk, poor in fat, sell for a greater or less price in proportion to the fat in the milk than cheese made from milk richer in fat? (3d) Do the butter and the skim-cheese made from the same milk bring, together, a larger price than would the cheese made from the same milk unskimmed? (4th) What is likely to be the ultimate effect of manufacturing skim-cheese upon the consumption of cheese?

1. POUNDS OF CHEESE MADE FOR EACH POUND OF FAT IN THE MILK.

	NUMBER OF EXPERIMENT.							
	1	2	3	4	5	6	7	8
Pounds of cheese for one pound of fat in the milk.	3.85	2.94	2.60	2.84	2.35	2.56	2.32	1.93
Pounds of fat in 100 pounds of milk.....	2.35	3.01	3.88	3.96	4.70	4.73	4.80	6.49

An examination of these figures indicates that *a pound of fat in a milk, poor in fat, will, as a rule, make more cheese than will a pound of fat in richer milk.* This would be expected, because the poorer milk contains larger proportions of casein relative to the fat than the richer ones, and, moreover, cheese, rich in casein,

tends to take up more water than cheese rich in fat, conditions of manufacture being the same. Hence, cheese made from skim-milk contains casein and water in large proportions and fat in relatively small proportions. This would, of course, affect the quality of the cheese. This point would bring us to the second question.

2. *Does cheese made from milk, poor in fat, sell for a greater or less price in proportion to the fat in the milk than cheese made from milk richer in fat?* In the arrangement given below, are indicated the prices per pound each cheese would have to sell for in order to realize twenty-five cents per pound for each pound of fat in milk. These figures are based upon the amount of cheese made from each milk separately.

	NUMBER OF EXPERIMENT.							
	1	2	3	4	5	6	7	8
Pounds of marketable cheese from 100 lbs. of milk.....	9.05	8.86	10.11	11.25	11.07	12.12	11.12	12.52
Pounds of fat in 100 lbs. of milk.....	2.35	3.01	3.88	3.96	4.70	4.73	4.80	6.49
Price in cents per pound of cheese, on basis of milk-fat at 25 cents per pound	6.50	8.50	9.60	8.80	10.60	9.80	10.80	13.00

It is probable that the first cheese would sell, in the open market, for a little more than 6.5 cents and for a little less than the second cheese; while the others would probably sell for ten or eleven cents at present prices. This, of course, presupposes that the cheeses are all equally well made. The eighth cheese would not be likely to bring thirteen cents in open market, though it would doubtless bring more than this in some special market. While we can not say definitely what each cheese would sell for in the open market, it is probable that the first cheese and, perhaps, the second cheese would realize more than twenty-five cents a pound for each pound of milk-fat; that the other cheeses would sell for nearly a uniform price, so that cheese made from milk containing over four per cent of fat would not realize over twenty-five cents per pound for the milk-fat and might fall short of this. To settle this point definitely these cheeses should have been sent to one or more market points to be examined by experts, when of marketable age, but it was not feasible, as the cheeses were to be used for study of the ripening process.

Perhaps the most that we can be warranted in saying is that it would probably not pay to work up into cheese, for the general market, milk containing much over four per cent. of fat. There are, probably, very few cheese factories in the State that are in any serious danger of getting milk that averages over four per cent. of fat for the season.

3. *Does the manufacture of cheese from ordinary factory milk pay better than the manufacture of skim-cheese and butter?* Much the same question is involved as in the preceding instance. To answer the question, we need to know (1st) how much butter and skim-cheese can be made from a certain quantity of milk; (2d) how much cheese can be made from the same quantity of the same milk; and (3d) what would be the market value of these products in each case.

In the case of a milk containing five per cent. or more of fat, doubtless one-fifth of the fat could be removed, made into butter and the remaining milk made into cheese that would sell per pound in open market for as much as the cheese made from the whole milk. If the price of butter were not very low compared with the price of cheese, the value of the fat in the butter would be greater than if made into cheese, since the cheese-making power of a pound of milk-fat tends to diminish quite rapidly when the amount of fat goes beyond that of average milk, and, in addition, the open market would, probably, in most cases recognize no difference between cheese made from milk containing four per cent. of fat and that containing five per cent.

To discuss the question in a more specific manner, we will take an illustration based on these experiments.

Suppose average factory milk contains about 3.5 pounds of fat in 100 pounds of milk. If made into cheese, each pound of fat would make, on an average, about 2.75 pounds of cheese, and 100 pounds of milk would make about 9.6 pounds of cheese. To realize twenty-five cents per pound for milk-fat, this cheese would have to sell for about 9.1 cents per pound.

Suppose, now, one pound of fat is removed from the milk and made into butter. Then, from each hundred pounds of milk we should make about 1.1 pounds of butter and not more than 7.5 pounds of cheese, since taking out one pound of fat from such

milk would reduce the cheese-making power of the remaining milk not less than two pounds, and might considerably more. To realize twenty-five cents for each pound of milk-fat, the butter and cheese would have to sell for 87.4 cents ; or the butter would have to sell for 22.7 cents per pound and the cheese for 8.6 cents per pound, and it is safe to presume that the cheese would not sell for any such price if the whole-milk cheese sells for 9.1 cents per pound, but that the butter and cheese together would sell for considerably less than the whole-milk cheese. The additional fat in the whole-milk cheese adds to the quality of the cheese more than enough to compensate for the diminished comparative yield.

In making the above estimates, the error, if any, has been made in favor of the skim-cheese.

It is, therefore, probably true that, under usual conditions, ordinary cheese-factory milk will yield a larger money return if made into cheese than if made into butter and skim-cheese. To demonstrate the point beyond all doubt, we need more extensive data.

4. *The ultimate effect of the manufacture of skim-cheese upon the general consumption of cheese.* Here we venture somewhat into the realm of the speculative. But, granting that more money can be gotten out of milk when made into butter and skim-milk cheese than when made into whole-milk cheese, does the manufacture of skim-milk cheese increase the aggregate consumption of cheese? There may be exceptional cases where persons prefer skim-milk cheese, but it is probably true that most people would prefer whole-milk cheese if they were taught to know the difference once. The entire annihilation of the manufacture of skim-cheese and the simultaneous improvement of the manufacture of whole-milk cheese would have a tendency to increase the aggregate consumption of cheese and make better prices. If skim-milk cheese must be made, it should go into the market branded as such in order that those who prefer skim-cheese may not run any risk of getting what they do not want ; and likewise those who do not want skim-milk cheese. The invariable effect of putting poor, cheap products upon the market is to discourage ultimately the production of the better grades of the same kind of products. Improvement of quality in any product is followed by increased demand at relatively better prices.

REMEDY FOR THE CHIEF DEFECT IN THE PRESENT METHOD OF
JUDGING CHEESE IN OPEN MARKET.

If the experiments described in this report suggest anything at all, they indicate that the fat in the milk is the most potent factor in determining the yield and quality of cheese, and that the quality of cheese is largely affected by the amount of fat contained in it. In the present method of judging cheese, only such general qualities, not always any too definite, as texture, flavor, etc., are used in determining the value of a cheese. How widely two experts may differ is well known. The factor of greatest importance — the amount of fat in cheese — is completely ignored. *We can not expect to receive pay for cheese according to its value until the amount of fat is taken into consideration in addition to the other points.* The desirability of considering this point in judging cheese is too evident to need any discussion.

CHEESE-MAKING AND BUTTER-MAKING.

Which pays better, to make milk into butter or cheese? The answer depends upon various conditions, such as (1st) the relative prices of cheese and butter, (2d) the amount of loss in the two kinds of manufacture, the amount and quality of the manufactured product, etc.

1. In winter, butter-making pays better, since the amount of fresh butter is far below the demand, and prices are comparatively high. In summer, cheese-making pays better, since the price of butter is then lowest, and, in the form of cheese, the product can be held and stored until prices are high.

2. As regards the loss of fat in cheese-making and butter-making, we may put the average cheese-factory loss of fat at not less than seven pounds of fat for each hundred pounds of milk-fat; this may not be high enough, as we have few data to base the opinion on. This would be equivalent to a loss of one pound of fat for a little over 400 pounds of milk or about one-quarter of a pound of fat for 100 pounds of milk. In the case of butter-making from the same milk, by ordinary processes of creaming by gravity-setting, of churning, etc., as in the case of the average farmer, the loss would be not far from half a pound of fat for every hundred pounds of milk. By using a centrifugal machine for separating the cream, and by skillful handling in subsequent

operations, the loss of fat can be reduced to less than six pounds of fat for each hundred pounds of milk-fat, which would, in case of milk containing 3.5 per cent. of fat, be equivalent to a loss of one pound of fat for 500 pounds of milk or one-fifth of a pound of fat for 100 pounds of milk.

As to yield of cheese and butter, the average yield of cheese on the above supposition would be about ten pounds of cheese for 100 pounds of milk. In the case of butter, as made by the average farmer, the amount of butter made from 100 pounds of milk would be about 3.5 pounds. In the best creameries, the yield would not be less than 3.9 pounds per hundred pounds of milk.

To realize twenty-five cents a pound on each pound of milk-fat, the cheese would have to sell at 8.75 cents per pound; the butter for 25 to 22.5, according to the amount lost in making.

XIII. GENERAL SUMMARY OF RESULTS OF INVESTIGATION OF CHEESE.

LOSS OF MILK CONSTITUENTS IN CHEESE-MAKING.

1. *Fat.*

a. The actual amount, as well as the proportion, of milk-fat lost in the whey increased gradually, but not uniformly, when the amount of fat in the milk increased.

b. The average amount of fat lost in the whey in all the experiments was about one-third of a pound for 100 pounds of milk, which was about 7.5 per cent. of the milk-fat. Taking only those experiments which most nearly represented average factory milk, the average amount of milk-fat lost was one-quarter of a pound for 100 pounds of milk, which was nearly seven per cent. of the milk-fat.

c. While it was true that the loss of fat increased, both absolutely and relatively, when the amount of fat in the milk increased, it was not true that all the additional fat above four per cent. or even above five and one-half per cent. was lost in the whey.

2. *Casein and albumen.*

a. The amount of casein and albumen lost appeared to bear no definite relation to the total amount of casein and albumen in the milk.

b. The average amount of casein and albumen in the milk in the eight experiments was 3.43 pounds per hundred pounds of milk; of this amount, about twenty-three per cent., or about 0.8 pounds, were lost.

c. The irregular variations in the proportion of casein and albumen lost were probably due to variations in the conditions of manufacture.

3. *Loss of fat and of casein and albumen in cheese-making as influenced by proportion of fat to casein and albumen in milk.*

a. When the amount of casein and albumen in the milk was nearly the same as, or greater than, the amount of fat, the loss of fat was least. When the amount of fat became considerably greater than the amount of casein and albumen, then the loss of fat increased. Comparatively large proportions of casein served to hold the fat more completely in the curd, as would be expected.

b. The amount of fat in the milk appeared, in no way, to have any influence on the amount of casein and albumen lost in the process of manufacture.

INFLUENCE OF COMPOSITION OF MILK ON COMPOSITION OF CHEESE.

1. *Fat.*

a. The proportion of fat in the cheese showed a tendency to increase, but not uniformly, when the amount of fat in the milk increased. There were about 24 pounds of fat in 100 pounds of cheese made from the skim-milk, while 100 pounds of the cheese made from the milk richest in fat contained about 45 pounds of fat.

b. Under the conditions of manufacture employed, cheese containing 30 pounds of fat per hundred pounds of cheese could not be made from milk containing less than three per cent of fat.

c. The fat exercised a greater influence on the composition of the cheese than any other constituent of the milk.

2. *Casein and albumen.*

a. There appeared to be no relation between the amount of casein and albumen in the milk and the amount of casein and albumen in 100 pounds of cheese.

3. *Composition of cheese as influenced by the proportion of fat to casein and albumen in milk.*

a. When the casein and albumen were present in the milk in largest quantities relative to the fat, the proportion of casein was greatest in the cheese; and when the fat in the milk was greatest relative to the casein and albumen, the casein in the cheese was least.

INFLUENCE OF COMPOSITION OF MILK ON YIELD OF CHEESE.

1. *Fat.*

a. The yield of cheese increased when the amount of fat in the milk increased, but not uniformly so.

b. In three experiments the increased yield of cheese was *wholly* due to increase of fat in the milk; while, in the other experiments, the increased yield was *mainly* due to increase of fat in milk.

2. *Casein and albumen.*

a. In several experiments, the amount of casein and albumen in the milk exercised no influence whatever upon the increase of yield, while, in the other cases, its influence was small as compared with that of the fat and less, even, than the influence of the water that was retained.

COMPARISON OF CHEDDAR AND STIRRED-CURD PROCESSES.

1. *Loss of milk-constituents in Cheddar process.*

a. *Fat.*—In one case, when the milk contained about four per cent. of fat, the proportion of fat lost was the same in both processes; in the other case, when the milk contained nearly five per cent. of fat, the loss of fat was less in the Cheddar process.

b. *Casein and albumen.*—In one case, the loss of casein and albumen was three per cent. less in the Cheddar process than in the stirred-curd process; while, in the other case, the loss by the Cheddar process was seven to nine per cent. less than in the stirred-curd process. The causes of these differences were probably due to variations of conditions not, in any way, related to these processes.

2. *Influence of Cheddar process on composition of cheese.*

a. *Fat*.—The cheese made by the Cheddar process contained a larger proportion of water and a correspondingly smaller proportion of fat than the cheese made by the stirred-curd process.

b. *Casein and albumen*.—The increase of water retained in the cheese by the Cheddar process caused a corresponding diminution in the proportion of casein and albumen in the cheese.

3. *Influence of Cheddar process on yield of cheese.*

a. In both trials, the Cheddar process made a larger amount of marketable cheese, producing one pound more of cheese from 100 pounds of milk than did the stirred-curd process.

COMPARISON OF COMMERCIAL AND HOME-MADE RENNET-EXTRACT.

In the two experiments, in which comparisons were made, no difference, in any respect, could be noticed that could be attributed to difference in the rennet-extract used.

CHANGES TAKING PLACE IN THE RIPENING OF CHEESE.

1. *Total loss of weight in ripening.*

a. The loss of weight varied, for the first five weeks, from 6.58 pounds to 9.30 pounds for each hundred pounds of cheese.

2. *Changes of fat due to ripening.*

a. There was a mechanical loss of fat, the exact amount of which was difficult to determine.

3. *Changes of casein due to ripening.*

a. There was practically no appreciable loss of casein during the first five weeks.

b. Analysis of two green cheeses indicated between one and two per cent of albumen in the cheese.

c. There appeared to be a general tendency for the insoluble casein to become less in quantity and for the soluble nitrogen compounds to increase.

d. The soluble nitrogen compounds showed a tendency to increase more rapidly in the cheeses containing the larger amounts of fat.

4. *Changes of acidity due to ripening.*

a. The acidity showed a marked tendency to diminish as the cheese became older.

SOME PRACTICAL APPLICATIONS.

1. *Milk-fat as a basis for purchasing milk at cheese factories.*

a. The method of paying for milk at cheese factories according to the amount of milk delivered, regardless of its composition, is unjust to the producers of the better milk. Payment for milk on the basis of the fat contained in it is the best method yet proposed, mainly for three reasons, (1st) the milk-fat appears to exercise a greater influence upon the composition and yield of cheese than does any other constituent of milk, and, therefore, forms a just basis for estimating the cheese-producing efficiency of factory milk; (2d) payment for milk according to its fat encourages and induces dairymen to produce a better quality of milk; (3d) payment for fat in milk removes any temptation to adulterate milk.

2. *Skimming factory milk.*

a. Taking the average factory milk of this State, it is probable that it is none too good for cheese-making and that removal of cream diminishes both the yield and quality of the cheese.

b. It seems probable that, under ordinary circumstances, a better money-return can be expected from average factory milk when made into whole-milk cheese than when skimmed partially and made into butter and skim-milk cheese.

XIV. COMPARISON OF DAIRY BREEDS OF CATTLE WITH REFERENCE TO PRODUCTION OF BUTTER.

It is the purpose of this report to present and discuss briefly the data that have accumulated up to December 1, 1891, in connection with the making of butter from the milk of the various individuals of breeds undergoing experiment. This will enable us to present the records of one or more individuals of each of six breeds for the first period of lactation. We are not yet able to give the complete record of four or more individuals of each breed for the first period of lactation, as we shall be able to do later. Special caution must be given, therefore, in regard to drawing any

general conclusions from the results presented ; for, until we have complete results from all the individuals of each breed, we can not establish any conclusions that may be regarded as definite and reliable. However, it will be seen that very much interest attaches to the results thus far obtained.

In order that those who are not acquainted with the previous history of this investigation may have a complete understanding of the character and objects of the work, they are referred to the following Station publications for the plans proposed and the results already secured :

- (1.) Eighth annual report of director (1889), pp. 14-21.
- (2.) Eighth annual report of chemist (1889), pp. 153-203.
- (3.) Bulletin No. 18, new series, November, 1889, on "Testing of Dairy Breeds."
- (4.) Bulletin No. 20, new series, June, 1890, on "Pedigrees of Animals under Investigation."
- (5.) Ninth annual report of chemist (1890), pp. 173-242.
- (6.) Ninth annual report of farm superintendent (1890), pp. 400-444.
- (7.) Bulletin No. 34, new series, August, 1891, on "Comparison of Dairy Breeds of Cattle with Reference to Production of Butter."

For a full description of the chemical work connected with this investigation, and for a full statement of the methods employed in creaming, churning, etc., the reader is referred to the chemist's report for 1890, pp. 197-206.

LENGTH OF LACTATION PERIOD.

The unit of time adopted for the purpose of comparing the breeds in regard to their production of milk, butter and cheese is the first ten months of each period of lactation. While the period of ten months is probably considerably longer than the average lactation period of the cows of the average dairyman, the present tendency in the best dairy practice is to utilize the cow as long as possible, and with our best dairymen, the lactation period is probably made to equal or exceed ten months in duration.

NUMBER OF INDIVIDUALS OF EACH BREED USED FOR COMPARISON IN
THIS REPORT.

In the tables which contain the monthly averages of the different breeds, the number of individuals of each breed is indicated below :

MONTH OF LACTATION.	Number of Ayrshires.	Number of Devons.	Number of Guernseys.	Number of Holderness.	Number of Holsteins.	Number of Jerseys.
1	2	2	2	2	....	1
2	3	2	2	2	1	2
3	3	2	2	2	1	2
4	3	2	2	2	1	2
5	3	2	2	2	1	3
6	3	2	2	2	1	3
7	4	1	2	2	1	3
8	4	1	2	2	1	3
9	4	1	2	2	1	3
10	4	1	2	2	1	3

Owing to unavoidable difficulties connected with the organization of the investigation, it is probable that the results obtained from the second period of lactation will afford a more complete and satisfactory basis of comparison in all cases.

METHODS EMPLOYED IN CALCULATING AVERAGES OF MONTHLY YIELDS.

The months of lactation are made to coincide with the calendar months, since the records are all kept and the changes of rations made by calendar months. It, therefore, happens in most cases that the first month of lactation is less than a full calendar month. In calculating the monthly averages, for obtaining monthly yields of milk, cream, butter, etc., the first month, if incomplete, is calculated up to a full month.

OUTLINE OF DATA TO BE PRESENTED.

The data will be presented and considered under the following heads :

1. Cost of food consumed and of butter produced.
2. Fat lost and recovered in butter-making: (1) Fat in milk; (2) Fat in skim-milk; (3) Fat in cream; (4) Fat in butter-milk; (5) Fat in butter; (6) Yield of butter; (7) Butter-making efficiency of milk-fat; (8) Summary of results.

3. Relations of milk, cream and butter: (1) Pounds of milk required to make one pound of butter; (2) Pounds of milk required to make one pound of cream; (3) Pounds of cream required to make one pound of butter; (4) Per cent. of fat in cream; (5) Summary of results.
4. Daily yields milk and butter.
5. Monthly yields of dairy products: (1) Pounds of milk; (2) Pounds of skim-milk; (3) Pounds of cream; (4) Pounds of butter-milk; (5) Pounds of fat in milk; (6) Pounds of fat in butter; (7) Pounds of butter; (8) Summary of results.
6. Temperature and time of churning.
7. Fat globules of milk: (1) Relative number of fat globules; (2) Relative size of fat globules.

COST OF FOOD CONSUMED AND OF BUTTER PRODUCED.

The composition of the foods and of the various rations given the cows under investigation, are fully given in the director's report. The values assigned to the food materials are the regular market value at the time they were purchased and fed, and are as follows:

Clover hay.....	\$12 00
Mixed-grass hay.....	10 00
Ensilage.....	3 00
Forage.....	2 00
Mangolds.....	3 00
Corn meal.....	20 00
Wheat bran.....	20 00
Ground oats.....	25 00
Linseed meal (old process).....	26 50
Linseed meal (new process).....	20 00
Gluten meal.....	27 00
Wheat middlings.....	20 00
Cotton-seed meal.....	29 60

It will be noticed that many of the foods were above their average market price.

TABLE SHOWING COST OF FOOD CONSUMED.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	\$1 31	\$1 20	\$1 55	\$0 63	.....	\$1 13
2	3 60	2 83	3 23	3 72	\$5 24	4 11
3	4 17	3 41	4 04	4 65	5 67	5 19
4	4 84	3 32	4 33	4 00	5 83	4 71
5	5 22	3 33	4 48	3 93	5 06	4 85
6	4 54	3 45	4 66	3 50	5 81	4 76
7	4 67	3 70	4 35	3 69	5 73	4 51
8	4 39	3 20	4 21	3 50	5 12	4 59
9	4 61	4 31	3 66	3 59	5 09	4 41
10	4 92	4 33	4 08	2 46	5 48	4 35

Monthly average for the first period of lactation :

(1.) Devons	\$3 37
(2.) Holderness	3 46
(3.) Guernseys	3 94
(4.) Ayrshires	4 33
(5.) Jerseys	4 46
(6.) Holsteins	5 45

The table given below, which shows the cost, in cents, of the food consumed for each pound of butter made, is based upon the figures given in the table above and those in a table presented later, which gives the average number of pounds of butter made for each month of lactation.

TABLE SHOWING COST (IN CENTS) OF FOOD CONSUMED FOR EACH POUND OF BUTTER MADE.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	14.24	15.00	9.57	8.63	.....	9.96
2	16.14	17.69	11.79	20.00	21.65	14.73
3	22.18	20.42	15.42	25.69	19.55	19.96
4	23.38	20.00	16.59	23.81	26.74	17.64
5	26.77	23.61	15.45	24.56	23.87	16.61
6	24.41	23.31	16.94	24.65	21.05	18.74
7	26.84	29.83	16.41	24.93	21.22	18.18
8	28.50	23.20	15.36	26.00	21.60	18.36
9	27.00	24.08	13.66	25.30	20.36	17.85
10	27.43	25.17	17.21	19.83	33.00	17.75

Monthly averages for the first period of lactation :

(1.) Guernseys	14.70
(2.) Jerseys	16.70
(3.) Holderness	22.04
(4.) Devons	22.17
(5.) Holsteins	22.61
(6.) Ayrshires	23.03

In calculating the cost of butter production in the foregoing table, the food alone is considered. The skim-milk and butter-milk are worth something, but there is no recognized market value for these by-products, and it is considered best to leave them out of consideration, and to calculate the cost of the butter without reference to them.

For the sake of uniformity in making our comparisons of the breeds, we have arbitrarily adopted ten months as the duration of a single period of lactation. In actual dairying, if a cow were productive ten months in each year, and non-productive during two months, the cost of keeping her twelve months would need to be considered in order to find the actual cost of butter produced. The actual cost of her production would be based, not upon the cost of her food for the ten productive months, but upon the cost of her food for the whole year, the non-productive as well as the productive period. However, in this investigation, we are not so much concerned with actual cost as with relative cost of butter production. Therefore, calculating for all breeds alike, the cost of butter production from the food consumed during the same productive period, we secure values that show the true *relative* cost of production for the different breeds.

Below, we present the profits given by each breed from the butter production of the first period of lactation, cost of food alone being considered. The price of the butter is estimated at twenty-five cents per pound and the cost of food is the same as given above.

PROFITS FROM BUTTER PRODUCTION FOR THE FIRST PERIOD OF
LACTATION.

(1.) Guernseys	\$27 60
(2.) Jerseys	22 15
(3.) Holsteins	5 75

(4.) Holderness	\$4 65
(5.) Devons	4 30
(6.) Ayrshires	3 70

FAT LOST AND RECOVERED IN BUTTER-MAKING.

The data presented in the tables below are derived from the monthly averages for the first period of lactation; that is, the first ten months of lactation. In the case of the fat in the cream, skim-milk, buttermilk and butter, the data are presented in two ways; first, the number of pounds of fat lost and recovered in 100 pounds of milk is given; second, the *proportion* of fat in milk lost and recovered is given. For example, in one of the tables given below, under "Fat lost in skim-milk," we see that the Guernseys lost 0.32 pounds of fat in the skim-milk from 100 pounds of milk. The original amount of fat in 100 pounds of the Guernsey milk was 5.02 pounds. The amount of fat lost in the skim-milk is 0.32 pounds and this amount is 6.4 per cent. of 5.02, the amount of fat in the milk. Therefore, we say that the *proportion* or *percentage* of milk-fat lost in the skim-milk is 6.4 per cent. Taking the Jersey skim-milk, the fat lost is 0.37 pounds, while the milk contains 5.68 pounds of fat for each hundred pounds of milk. Here the actual loss of fat in the skim-milk from 100 pounds of milk is greater than in the case of the Guernseys, but the Jersey milk contains more fat to commence with, so that the *proportion* of fat lost is very nearly the same as in the case of the Guernseys, being about 6.5 per cent. of the milk-fat. In the following tables it will be noticed in several cases, that while the *actual* loss of fat is greater in one case than in another, the *proportion* of fat lost is less in the case where the actual loss is greater, since the amount of fat in the milk, at the start, is greater in the latter case.

1. *Pounds of fat in 100 pounds of milk.*

(1.) Jerseys	5.68
(2.) Guernseys	5.02
(3.) Devons	4.46
(4.) Holsteins	3.74
(5.) Holderness	3.60
(6.) Ayrshires	3.50

2. Fat lost in skim-milk.

Pounds of fat in skim-milk from 100 pounds of milk :

(1.) Guernseys	0.32
(2.) Jerseys	0.37
(3.) Holderness	0.44
(4.) Ayrshires	0.55
(5.) Devons	0.57
(6.) Holsteins	0.68

Percentage of fat in milk lost in skim-milk :

(1.) Guernseys	6.4
(2.) Jerseys	6.5
(3.) Holderness	12.2
(4.) Devons	12.7
(5.) Ayrshires	15.7
(6.) Holsteins	18.2

3. Fat recovered in cream.

Pounds of fat in cream from 100 pounds of milk :

(1.) Jerseys	5.31
(2.) Guernseys	4.70
(3.) Devons	3.89
(4.) Holderness	3.16
(5.) Holsteins	3.06
(6.) Ayrshires	2.95

Percentage of fat in milk recovered in cream :

(1.) Guernseys	93.6
(2.) Jerseys	93.5
(3.) Holderness	87.8
(4.) Devons	87.3
(5.) Ayrshires	84.3
(6.) Holsteins	81.8

4. Fat lost in buttermilk.

Pounds of fat in buttermilk from 100 pounds of milk :

(1.) Devons	0.03
(2.) Guernseys	0.03
(3.) Holderness	0.05
(4.) Jerseys	0.06
(5.) Ayrshires	0.09
(6.) Holsteins	0.12

Percentage of fat in milk lost in buttermilk :

(1.) Devons	0.7
(2.) Guernseys	1.0
(3.) Jerseys	1.1
(4.) Holderness	1.4
(5.) Ayrshires	2.6
(6.) Holsteins	3.2

5. Fat recovered in butter.

Pounds of fat in butter from 100 pounds of milk :

(1.) Jerseys	5.06
(2.) Guernseys	4.57
(3.) Devons	3.67
(4.) Holderness	3.01
(5.) Holsteins	2.79
(6.) Ayrshires	2.77

Percentage of fat in milk recovered in butter :

(1.) Guernseys	91.0
(2.) Jerseys	89.1
(3.) Holderness	83.6
(4.) Devons	82.3
(5.) Ayrshires	79.1
(6.) Holsteins	74.6

6. Yield of butter.

Pounds of butter made from 100 pounds of milk :

(1.) Jerseys	5.95
(2.) Guernseys	5.38
(3.) Devons	4.32
(4.) Holderness	3.54
(5.) Holsteins	3.29
(6.) Ayrshires	3.26

7. Butter-making efficiency of milk-fat.

Pounds of butter made for one pound of fat in milk :

(1.) Guernseys	1.07
(2.) Jerseys	1.04
(3.) Holderness	0.98
(4.) Devons	0.97
(5.) Ayrshires	0.93
(6.) Holsteins	0.88

SUMMARY OF RESULTS.

a. FAT IN MILK.

The milk of the Jerseys contains the largest amount of fat. Taking the amount of fat in a given amount of Jersey milk as 100, the amount of fat contained in the same quantity of milk of the other breeds will be indicated in the following arrangement:

(1.) Jerseys	100.0
(2.) Guernseys	88.4
(3.) Devons	78.5
(4.) Holsteins	65.8
(5.) Holderness	63.4
(6.) Ayrshires	61.6

b. CREAMING EFFICIENCY OR PROPORTION OF MILK-FAT RECOVERED IN CREAM.

The milk of the Guernseys creamed most completely. For every hundred pounds of fat recovered by the Guernseys in the cream from a certain amount of milk, we shall have the following amounts of fat recovered from the same amount of milk in the case of the other breeds:

(1.) Guernseys	100.0
(2.) Jerseys	99.9
(3.) Holderness	93.8
(4.) Devons	93.3
(5.) Ayrshires	90.0
(6.) Holsteins	87.4

c. PROPORTION OF MILK-FAT RECOVERED IN BUTTER.

The milk-fat of the Guernseys was recovered most completely in the butter. Since the greatest loss of milk-fat in butter-making is in creaming, where gravity processes of creaming are employed, the proportion of milk-fat recovered in the butter follows more or less closely the proportion of milk-fat recovered in the cream. For every hundred pounds of milk-fat recovered in the butter in the case of the Guernseys, the other breeds recover the following amounts:

(1.) Guernseys	100.0
(2.) Jerseys	98.0
(3.) Holderness	91.9

(4.) Devons.....	90.4
(5.) Ayrshires	86.9
(6.) Holsteins.....	82.0

d. YIELD OF BUTTER.

As the milk of the Jerseys stands first in the amount of fat contained in it, so it stands first in the actual amount of butter made from 100 pounds of milk. For every hundred pounds of butter made from a certain quantity of Jersey milk, the amounts of butter indicated below will be made from the same amount of milk of the other breeds :

(1.) Jerseys	100.0
(2.) Guernseys	90.4
(3.) Devons	72.6
(4.) Holderness.....	59.5
(5.) Holsteins	55.3
(6.) Ayrshires	54.8

e. BUTTER-MAKING EFFICIENCY OF MILK-FAT.

Each pound of milk-fat in the Guernsey milk makes more butter than in the case of any other breed. For each hundred pounds of butter made from a certain quantity of milk-fat, the amounts of butter made from the same amount of milk-fat by the other breeds are as follows :

(1.) Guernseys	100.0
(2.) Jerseys	97.2
(3.) Holderness.....	91.6
(4.) Devons	90.7
(5.) Ayrshires	86.9
(6.) Holsteins	82.2

f. SIMILARITY IN CERTAIN BREEDS.

In examining the preceding tables it will be noticed that in regard to creaming, churning and butter-making efficiency the breeds appear to separate quite sharply into three sets of two each, as follows :

(1.) Guernseys and Jerseys :

Creaming efficiency	93.6 and 93.5
Churning efficiency	91.0 and 89.1
Butter-making efficiency.....	1.07 and 1.04

(2.) Holderness and Devons :

Creaming efficiency	87.8	and	87.3
Churning efficiency	83.6	and	82.3
Butter-making efficiency	0.98	and	0.97

(3.) Ayrshires and Holsteins :

Creaming efficiency	84.3	and	81.8
Churning efficiency	79.1	and	74.6
Butter-making efficiency	<u>0.93</u>	and	<u>0.88</u>

When we consider the actual amount of fat in butter and amount of butter made from a hundred pounds of milk the uniformity is not as striking, the Holderness then being more like the Ayrshires and Holsteins than like the Devons.

RELATIONS OF MILK, CREAM AND BUTTER.

1. *Relation of milk to butter.*

Pounds of milk required to make one pound of butter :

(1.) Jerseys	16.8
(2.) Guernseys	18.7
(3.) Devons	23.5
(4.) Holderness	28.7
(5.) Ayrshires	30.8
(6.) Holsteins	<u>30.9</u>

2. *Relation of milk to cream.*

Pounds of milk required to make one pound of cream :

(1.) Guernseys	3.72
(2.) Jerseys	3.89
(3.) Devons	5.01
(4.) Holderness	5.51
(5.) Ayrshires	6.27
(6.) Holsteins	<u>6.54</u>

3. *Relation of cream to butter.*

Pounds of cream required to make one pound of butter :

(1.) Jerseys	4.32
(2.) Devons	4.69
(3.) Holsteins	4.74
(4.) Ayrshires	4.91
(5.) Guernseys	5.03
(6.) Holderness	<u>5.09</u>

4. *Fat in cream.*

Per cent. of fat in cream :

(1.) Jerseys	20.66
(2.) Holsteins	19.87
(3.) Devons	18.97
(4.) Ayrshires	18.40
(5.) Holderness.....	17.43
(6.) Guernseys	17.40

5. *Summary of results.*

a. AMOUNT OF MILK REQUIRED TO MAKE BUTTER.

It required less milk to make one pound of butter in the case of the Jerseys than in the case of any other breed. This is, of course, what might be expected from the results presented already in the preceding pages, since the Jersey milk contains the largest amount of fat and recovers most of it in the butter. If 100 pounds of Jersey milk make a certain amount of butter, the arrangement below indicates how much milk of each breed will be required to make the same amount of butter :

(1.) Jerseys.	100.0
(2.) Guernseys	111.3
(3.) Devons.	140.0
(4.) Holderness.....	170.8
(5.) Ayrshires... ..	183.3
(6.) Holsteins	183.9

b. AMOUNT OF MILK REQUIRED TO MAKE CREAM.

Least milk is required to make one pound of cream in the case of the Guernseys. This is largely due to the fact that the cream from the milk of the Guernseys contained the lowest per cent. of fat, and, in addition, the amount of fat in the Guernsey milk was second to the highest. If 100 pounds of Guernsey milk make a certain amount of cream, then, for the other breeds, there will be required, to make the same amount of cream, the amounts of milk given below :

(1.) Guernseys	100.0
(2.) Jerseys	104.6
(3.) Devons	134.7
(4.) Holderness	148.1
(5.) Ayrshires.....	168.7
(6.) Holsteins	176.0

c. AMOUNT OF CREAM REQUIRED TO MAKE BUTTER.

To make one pound of butter requires least cream in the case of the Jerseys. The amount of cream required to make a pound of butter will depend mainly upon two things, (1st) the per cent. of fat in the cream, and (2d) the loss of fat in churning. If 100 pounds of Jersey cream make a certain amount of butter, then the other breeds will require, in order to make the same amount of butter, the amounts of cream stated below:

(1.) Jerseys	100.0
(2.) Devons	108.6
(3.) Holsteins	109.7
(4.) Ayrshires	113.6
(5.) Guernseys	116.4
(6.) Holderness	118.0

d. PER CENT. OF FAT IN CREAM.

The cream made from the milk of the Jerseys contained most fat. In the case of the other breeds, the amount of fat in the milk seemed to have no definite relation to the amount of fat in the cream. This is a somewhat uncommon experience, it being generally held that by the same method of creaming the richness of the cream in fat will vary with the richness of the milk in fat. The Guernseys stand second in respect to amount of fat in milk, but their cream is least rich in fat. These averages are based upon work extending over a period of ten months and every effort was made to secure uniform conditions in the creaming method employed. They can, therefore, scarcely be regarded as the result of some temporary and incidental irregularity either in the cows or in the methods of creaming. The Holstein milk stands fourth in respect to the amount of its milk-fat, while the cream stands second in richness of fat.

DAILY YIELDS OF MILK AND BUTTER.

During the first period of lactation, the average daily yield of milk and of butter for each breed was as follows:

1. *Daily yield of milk.*

Pounds of milk given per day:

(1.) Holsteins	24.3
(2.) Ayrshires	18.6
(3.) Guernseys	16.6

(4.) Jerseys	14.9
(5.) Holderness	14.9
(6.) Devons	12.0

2. *Daily yield of butter.*

Pounds of butter produced per day:

(1.) Guernseys	0.90
(2.) Jerseys	0.89
(3.) Holsteins	0.79
(4.) Ayrshires	0.61
(5.) Holderness	0.52
(6.) Devons	0.51

3. *Summary of results.*

The Holsteins gave the largest average amount of milk daily, while the Guernseys, closely followed by the Jerseys, gave the largest average daily yield of butter.

AVERAGE MONTHLY YIELDS OF DAIRY PRODUCTS.

1. *Monthly yield of milk.*

Pounds of milk per month:

(1.) Holsteins	743.8
(2.) Ayrshires	578.6
(3.) Guernseys	500.6
(4.) Holderness	449.8
(5.) Jerseys	449.1
(6.) Devons	357.0

2. *Monthly yield of skim-milk.*

Pounds of skim-milk per month:

(1.) Holsteins	630.1
(2.) Ayrshires	485.2
(3.) Holderness	367.8
(4.) Guernseys	365.6
(5.) Jerseys	333.7
(6.) Devons	285.7

3. *Monthly yield of cream.*

Pounds of cream per month:

(1.) Guernseys	135.0
(2.) Jerseys	115.4
(3.) Holsteins	113.7

(4.) Ayrshires	93.4
(5.) Holderness	82.0
(6.) Devons	71.3

4. *Monthly yield of buttermilk.*

Pounds of buttermilk per month :

(1.) Guernseys	108.2
(2.) Holsteins	89.6
(3.) Jerseys	88.7
(4.) Ayrshires	74.6
(5.) Holderness	66.3
(6.) Devons	56.1

5. *Monthly yield of fat in milk.*

Pounds of fat in milk per month :

(1.) Holsteins	27.81
(2.) Jerseys	25.45
(3.) Guernseys	24.96
(4.) Ayrshires	20.20
(5.) Holderness	16.07
(6.) Devons	15.79

6. *Monthly yield of fat in butter.*

Pounds of fat in butter per month:

(1.) Guernseys	22.8
(2.) Jerseys	22.7
(3.) Holsteins	20.5
(4.) Ayrshires	16.0
(5.) Holderness	13.3
(6.) Devons	12.9

7. *Monthly yield of butter.*

Pounds of butter per month:

(1.) Guernseys	26.8
(2.) Jerseys	26.7
(3.) Holsteins	24.1
(4.) Ayrshires	18.8
(5.) Holderness	15.7
(6.) Devons	15.2

8. *Summary of results.**a. YIELD OF MILK.*

The Holsteins gave the largest amount of milk. Below we state the amount of milk given by each breed for 100 pounds of milk given by the Holsteins:

(1.) Holsteins	100.0
(2.) Ayrshires	77.8
(3.) Guernseys	67.3
(4.) Holderness	60.5
(5.) Jerseys	60.4
(6.) Devons	48.0

b. YIELD OF FAT IN MILK.

The average amount of fat given in the milk per month was greatest in the case of the Holsteins. Below we state the pounds of milk-fat given by each breed for 100 pounds of fat in the milk of the Holsteins:

(1.) Holsteins	100.0
(2.) Jerseys	91.5
(3.) Guernseys	89.7
(4.) Ayrshires	72.6
(5.) Holderness	57.8
(6.) Devons	56.8

c. YIELD OF FAT IN BUTTER.

From what was stated in connection with the creaming and churning efficiency of the milk-fat in the case of the different breeds, it is not surprising that the Guernseys, while standing third in the amount of fat yield, should stand first in regard to the amount of fat recovered in the butter. If the milk of the Holsteins did not lose so much fat in creaming, the Holsteins would easily make the largest amount of butter. The question arises as to the best method of getting the fat of the Holsteins from the milk to the butter without such serious loss. This can be accomplished satisfactorily by using a centrifugal machine for creaming the milk. As we propose to use a centrifugal separator in connection with the second period of lactation, the results will be brought out in our future work.

d. YIELD OF BUTTER.

The Guernseys lead in the average monthly yield of butter, the Jerseys very closely following. For each hundred pounds of butter made by the Guernseys, the other breeds produced the amounts indicated below:

(1.) Guernseys	100.0
(2.) Jerseys	99.7
(3.) Holsteins	89.9
(4.) Ayrshires	70.2
(5.) Holderness.....	58.6
(6.) Devons	56.7

TEMPERATURE AND TIME OF CHURNING.

1. *Temperature of churning.*

Degrees Fahrenheit in churning:

(1.) Jerseys	62.3°
(2.) Holsteins	63.3°
(3.) Guernseys	63.4°
(4.) Ayrshires	63.5°
(5.) Holderness.....	63.5°
(6.) Devons	66.6°

2. *Time of churning.*

Minutes for churning:

(1.) Guernseys	31
(2.) Ayrshires	43
(3.) Devons	51
(4.) Jerseys	56
(5.) Holderness.....	73
(6.) Holsteins	91

FAT GLOBULES OF MILK.

Below we give data pertaining to (1st) relative number of fat globules and (2d) relative size of fat globules. The methods employed in determining these data are those devised by Dr. S. M. Babcock and described in the fourth annual report of this Station.

The *relative number* of fat globules is ascertained directly by counting the globules by means of a microscope in a known amount of milk. For the sake of comparison, it is desirable to know how many globules there are in some particular volume.

The volume of milk adopted as a standard for the sake of comparing the number of fat globules is one-ten-thousandth of a cubic millimeter, one cubic millimeter occupying about the volume of an ordinary pin-head. By using so small an amount of milk, we get numbers which are not too large to comprehend, and which answer satisfactorily for the purposes of comparison. The *relative number* of fat globules means, therefore, the number in one-ten-thousandth (.0001) of one cubic millimeter of milk.

If we know the volume of fat and the number of globules in that volume, we can readily ascertain the average volume or size of one globule by dividing the volume of fat by the number of globules. Since we desire only relative numbers for the sake of comparison, it answers the purpose to take the per cent. of fat in the milk, obtained by analysis, as representing the volume of fat. If, then, we divide the per cent. of fat in the milk by the number of globules in .0001 cubic millimeters of milk, we shall obtain the average relative volume or size of one globule. As the number thus obtained is too small for convenient use, it is multiplied by 10,000, and the number obtained is used to represent the *relative size* of the fat globules. The numbers representing the relative size of the fat globules do not, therefore, represent any actual size or volume, nor can they be referred to one standard of size; but, by proceeding in the manner described with different milks, we get numbers which can be compared and which represent, relatively to one another, the average size or volume of the fat globules in the different milks. As pointed out by Doctor Babcock, the average diameter of globules would not serve well for comparison, unless the globules were uniform in size or nearly so. "But as the volumes of spheres vary, not directly as their diameters, but as the cubes of their diameters, and as the average of a series of numbers does not determine what the average of their cubes will be, it follows, with bodies varying to the extent often occurring in the fat globules of milk, that their average diameter conveys no definite idea of their volume, which is really, in most cases, what is sought. The average volume of milk globules, owing to their variable size, is always greater than the volume indicated by their average diameter, the difference between two volumes being greatest when the globules vary most in size. It is, therefore, evident that if we wish to study the

influence of the size of globules upon the character of milk, their volume rather than their average diameter should be considered." (Fourth Annual Report of this Station, page 297.)

1. *Relative number of fat globules.*

Number of globules in .0001 c. mm. of milk :

(1.) Jerseys	69
(2.) Guernseys	79
(3.) Holderness	92
(4.) Holsteins	103
(5.) Ayershires	106
(6.) Devons	147

2. *Relative size of fat globules.*

Relative size of globules :

(1.) Jerseys	956
(2.) Guernseys	716
(3.) Holderness	428
(4.) Ayrshires	421
(5.) Holsteins	405
(6.) Devons	375

There appears to be a general relation between the relative number of fat globules and the creaming and churning efficiency, the milk containing the fewer number being more efficient for butter-making. In regard to the relative size of the fat globules, the larger the size, the more efficient the creaming and churning, which we see is borne out in a general way by the foregoing numbers, though modified in some cases by other factors.

GENERAL SUMMARY OF RESULTS RELATING TO BUTTER-PRODUCTION OF DIFFERENT BREEDS.

The more important results that have been presented in the foregoing tables are summarized in the table presented below. As previously stated, these results are not complete, and they must not be regarded as conclusive. Following this summary, we present tables containing data pertaining to the averages of each breed, and, finally, tables containing the records of the various individuals of each breed. Since only one Holstein (Esel 2nd) is considered in the averages for herds, her average at present constitutes the herd average, and is not repeated. So, no Holstein herd average appears.

TABULATED SUMMARY OF RESULTS FOR THE FIRST PERIOD OF LACTATION.

	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
Monthly average cost of food consumed	\$4 33	\$3 37	\$3 94	\$3 46	\$5 45	\$4 46
Food-cost of each pound of butter produced	0 23	0 22	0 15	0 22	0 23	0 17
Profits from butter production for period	3 70	4 30	27 60	4 65	5 75	22 15
Pounds of fat in 100 pounds of milk	3.50	4.46	5.02	3.60	3.74	5.68
Per cent. of fat in milk lost in skim-milk	15.70	12.70	6.40	12.20	18.20	6.50
Per cent. of fat in milk recovered in cream	84.30	87.30	93.60	87.80	81.80	93.50
Per cent. of fat in milk lost in buttermilk	2.60	0.70	1.00	1.40	3.20	1.10
Per cent. of fat in milk recovered in butter	79.10	82.30	91.00	83.60	74.60	89.10
Pounds of butter from 100 pounds of milk.	3.26	4.32	5.38	3.54	3.29	5.95
Pounds of butter made for one pound of fat in milk	0.98	0.97	1.07	0.98	0.88	1.04
Pounds of milk required to make one pound of butter	30.80	23.50	18.70	23.70	30.90	16.80
Pounds of milk required to make one pound of cream	6.27	5.01	3.72	5.51	6.54	3.89
Pounds of cream required to make one pound of butter ..	4.91	4.69	5.03	5.09	4.74	4.32
Per cent. of fat in cream ..	18.40	18.97	17.40	17.43	19.87	20.66
Pounds of milk given per day	18.60	12.00	16.60	14.00	24.30	14.90
Pounds of butter produced per day	0.61	0.51	0.90	0.52	0.79	0.89
Pounds of milk given per month	578.60	357.00	500.60	449.80	743.80	449.10
Pounds of fat in milk per month	20.20	15.79	24.96	16.07	27.81	25.45
Pounds of butter per month	18.80	15.20	26.80	15.70	24.10	26.70

AYRSHIRE BUTTER RECORD — MONTHLY AVERAGES OF HERD.

MONTH OF LACTATION.	CHURNING.			FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.		
	Average temperature during churning.	Time of churning.	Hrs. Min.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 85 per cent. of butterfat.	Relative number of fat globules.	Relative size of fat globules.
1	62	....	28	18.00	3.53	0.35	3.18	0.05	3.07	3.50	62	687
2	61	...	30	20.55	3.48	0.29	3.19	0.07	3.06	3.50	66	580
3	62	....	34	19.20	3.40	0.42	2.98	0.11	2.76	3.25	70	624
4	61	....	35	19.68	3.40	0.38	3.02	0.10	2.80	3.29	85	426
5	64	....	35	20.14	3.37	0.39	2.98	0.09	2.79	3.28	93	384
6	65	....	41	16.12	3.26	0.52	2.74	0.06	2.65	3.12	94	399
7	64	1	00	16.95	3.48	0.78	2.70	0.12	2.49	2.96	117	328
8	65	....	41	17.31	3.61	0.91	2.70	0.12	2.46	2.90	140	298
9	65	1	02	18.19	3.68	0.67	3.01	0.06	2.77	3.29	168	241
0	66	1	00	17.88	3.83	0.82	3.01	0.13	2.80	3.31	162	248
1	64	....	53	16.72	4.10	0.89	3.21	0.25	2.89	3.40	156	336
2	68	....	31	16.10	3.84	0.15	3.69	0.11	3.56	4.19	146	328

AYRSHIRE BUTTER RECORD — MONTHLY AVERAGES OF HERD — (Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
1*	27.80	5.64	5.00	0.55	260.2	214.1	40.1	36.9	7.8	9.2	90.9	9.1	1.3	87.6
2	27.80	6.30	4.51	0.75	636.3	525.3	110.0	87.7	19.0	22.3	92.1	7.9	1.9	88.7
3	30.75	6.52	4.87	0.65	596.4	504.9	91.5	72.7	16.0	18.8	87.9	12.1	3.2	82.1
4	30.40	6.56	4.73	0.67	642.7	544.7	98.0	77.3	17.6	20.7	88.7	11.3	2.7	82.8
5	30.50	6.85	4.56	0.65	611.2	522.0	89.2	69.7	16.6	19.5	88.1	11.9	2.3	82.6
6	32.05	5.92	5.63	0.59	619.1	514.5	104.6	86.0	15.8	18.6	82.7	17.3	1.8	79.9
7	33.80	6.54	5.35	0.58	609.2	516.1	93.1	75.7	14.8	17.4	78.0	22.0	3.2	72.5
8	34.48	6.84	5.28	0.52	545.7	466.0	79.7	64.3	13.1	15.4	77.0	23.0	3.2	71.0
9	30.40	6.08	5.28	0.57	539.5	450.8	88.7	71.6	14.5	17.1	82.7	17.3	1.7	77.0
10	30.20	5.43	5.30	0.63	512.4	418.1	94.3	76.4	15.2	17.9	89.8	10.2	1.4	87.4
11	29.36	5.40	5.09	0.64	537.8	438.2	99.6	79.9	16.7	19.7	90.8	9.2	6.9	82.9
12	23.87	4.37	5.50	0.64	476.0	367.0	109.0	89.3	16.7	19.7	96.4	3.6	3.0	92.8

* First month of lactation averaged sixteen and one-half days.

DEVON BUTTER RECORD — MONTHLY AVERAGES OF HERD.

MONTH OF LACTATION.	CHURNING.			FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.		
	Average temperature during churning.	Time of churning.	Hrs. Min.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 85 per cent. butter fat.	Relative number of fat globules.	Relative size of fat globules.
	Degrees.											
1	64	...	35	17.42	3.54	0.20	3.34	0.01	3.32	3.91	68	546
2	65	...	31	18.56	3.73	0.38	3.35	0.02	3.28	3.86	68	585
3	64	...	36	19.40	3.96	0.53	3.43	0.02	3.32	3.91	99	450
4	67	1	10	17.90	4.28	0.55	3.73	0.01	3.60	4.24	77	547
5	66	...	39	19.92	4.43	0.77	3.66	0.03	3.30	3.88	152	319
6	67	1	8	19.70	5.06	0.83	4.23	0.03	3.92	4.61	144	355
7	68	...	53	16.68	4.93	1.21	3.72	0.04	3.25	3.83	186	270
8	68	1	31	17.44	4.44	1.04	3.40	0.02	3.38	3.98	241	200
9	69	...	55	23.14	5.57	0.11	5.46	0.09	4.88	5.74	225	250

DEVON BUTTER RECORD — MONTHLY AVERAGES OF HERD — (Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
1*	25.60	5.23	4.92	0.51	205.9	166.5	39.4	31.4	6.8	8.0	94.3	5.7	0.4	93.7
2	25.76	5.54	4.70	0.54	418.3	342.8	75.5	59.5	13.6	16.0	90.0	10.0	0.5	88.2
3	25.60	5.66	4.54	0.54	428.4	352.7	75.7	59.0	14.2	16.7	86.6	13.4	0.5	83.9
4	23.60	4.85	4.94	0.56	398.8	316.6	82.2	65.6	14.1	16.6	86.7	13.3	0.3	84.0
5	25.82	5.48	4.71	0.46	362.8	296.6	66.2	52.1	12.0	14.1	82.3	17.7	0.7	74.4
6	21.69	4.82	4.70	0.50	335.2	265.2	70.0	55.2	12.6	14.8	82.6	17.4	0.5	77.0
7	26.12	4.48	5.83	0.41	323.5	251.3	72.2	59.8	10.5	12.4	75.3	24.7	0.8	66.0
8	25.13	5.13	4.90	0.45	346.0	278.6	67.4	53.7	11.7	13.8	76.6	23.4	0.5	76.0
9	17.42	4.23	4.12	0.60	311.9	238.2	73.7	55.8	15.2	17.9	98.0	2.0	1.6	87.6

* First month of lactation averaged nineteen and one-half days.

GUERNSEY BUTTER RECORD — MONTHLY AVERAGES OF HERD.

MONTH OF LACTATION.	CHURNING.			FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
	Average temperature during churning.	Time of churning.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 86 per cent. of butterfat.	Relative number of fat globules.	Relative size of fat globules.
	Degrees.	Hrs. Min.									
1	60	17	21.42	6.14	0.16	5.98	0.17	5.75	6.76	61	928
2	61	19	18.14	5.13	0.18	4.95	0.05	4.76	5.59	46	1,063
3	63	32	16.61	4.61	0.25	4.37	0.03	4.24	5.04	52	954
4	62	36	14.85	4.63	0.19	4.42	0.02	4.37	5.14	76	659
5	62	34	18.72	5.00	0.20	4.80	0.02	4.66	5.48	64	837
6	62	44	18.74	4.93	0.37	4.56	0.02	4.42	5.20	70	737
7	64	32	17.03	4.83	0.46	4.37	0.04	4.23	4.98	103	584
8	65	42	16.18	4.86	0.37	4.49	0.03	4.43	5.20	89	568
9	66	26	16.16	4.92	0.34	4.58	0.05	4.52	5.32	120	408
10	69	28	16.10	5.14	9.69	4.45	0.10	4.35	5.12	104	426
11	68	41	23.57	5.63	0.25	5.38	0.22	4.77	5.61	136	528
12	70	26	22.44	5.64	0.30	5.34	0.23	5.10	6.01	118	550

GUERNSEY BUTTER RECORD — MONTHLY AVERAGES OF HERD — (Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.						MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.	Per cent. of fat recovered in milk.	Per cent. of fat recovered in butter.
1*	14.95	3.64	4.24	0.89	250.4	191.7	68.7	52.5	13.8	16.2	97.3	2.7	1.3	98.0	98.0	98.0
2	17.90	3.66	4.93	0.89	491.7	357.6	134.1	106.7	23.3	27.4	96.5	3.5	0.8	93.0	93.0	93.0
3	19.82	3.76	5.29	0.89	520.0	381.7	138.3	112.1	22.3	26.2	94.7	5.3	0.6	92.3	92.3	92.3
4	19.51	3.34	5.87	0.89	509.3	356.8	152.5	126.4	22.2	25.1	95.9	4.1	0.5	94.4	94.4	94.4
5	18.25	3.88	4.70	0.95	529.6	393.1	136.5	107.5	24.7	29.0	96.1	3.9	0.4	93.0	93.0	93.0
6	19.22	4.13	4.67	0.91	530.0	401.7	128.3	100.5	23.4	27.5	92.6	7.4	0.4	89.6	89.6	89.6
7	20.04	3.91	5.17	0.88	537.0	399.7	137.3	110.8	22.5	26.5	90.4	9.6	0.3	87.6	87.6	87.6
8	19.22	3.63	5.30	0.90	527.0	381.8	145.2	117.8	23.3	27.4	92.6	7.4	0.6	91.3	91.3	91.3
9	18.80	3.54	5.39	0.88	512.2	367.5	144.7	117.9	22.8	26.8	93.1	6.9	1.2	91.5	91.5	91.5
10	19.53	3.66	5.35	0.78	463.7	337.1	126.6	102.9	20.1	23.7	86.8	13.2	2.0	84.7	84.7	84.7
11	17.90	4.38	4.09	0.84	451.1	348.1	103.0	77.8	21.4	25.2	95.8	4.2	4.6	85.0	85.0	85.0
12	16.67	4.22	3.95	0.87	441.2	336.7	104.5	78.0	22.5	26.5	94.9	5.1	5.6	90.7	90.7	90.7

* First month of lactation averaged nineteen and one-half days.

AMERICAN HOLDENESS BUTTER RECORD — MONTHLY AVERAGES OF HERD.

	CHURNING.			FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
	Average temperature during churning.	Time of churning.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 88 per cent. of butterfat.	Relative number of fat globules.	Relative size of fat globules.
	Degrees.	Hrs. Min.									
1	60	1 06	23.22	5.04	0.63	4.41	0.12	4.15	4.88	.....	.....
2	60	53	20.79	3.61	0.42	3.19	0.05	2.97	3.51	67	661
3	60	49	18.99	3.37	0.38	2.99	0.07	2.77	3.26	68	607
4	62	1 16	16.29	3.44	0.42	3.02	0.04	2.94	3.45	87	501
5	65	1 25	15.21	3.33	0.43	2.90	0.02	2.82	3.31	79	397
6	66	1 26	13.79	3.33	0.36	2.97	0.05	2.90	3.42	104	324
7	66	1 42	15.30	3.35	0.33	3.02	0.04	2.98	3.49	111	329
8	63	1 12	18.52	3.49	0.44	3.05	0.02	2.94	3.45	94	379
9	66	....	17.65	3.59	0.56	3.03	0.03	2.97	3.50	116	315
10	67	1 23	14.58	3.44	0.41	3.03	0.08	2.64	3.10	106	336
11	68	1 32	17.95	3.33	0.35	2.98	0.03	2.91	3.43	146	235
12	69	....	16.15	3.45	0.42	3.03	0.07	2.78	3.27	160	246

MONTH OF LACTATION.

AMERICAN HOLDERNESS BUTTER RECORD—MONTHLY AVERAGES OF HERD—(Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
1*	20.45	5.29	3.90	0.58	150.8	122.3	28.5	21.2	6.2	7.3	87.8	12.2	2.2	82.4
2	28.50	6.49	4.48	0.61	541.2	457.8	83.4	64.8	15.8	18.6	88.2	11.8	1.3	82.3
3	30.67	6.35	4.86	0.61	558.6	470.6	88.0	69.9	15.4	18.1	88.5	11.5	2.2	82.1
4	29.00	5.38	5.44	0.55	489.2	398.3	90.9	74.1	14.3	16.8	87.2	12.8	1.0	85.4
5	30.20	5.26	5.76	0.52	483.9	392.1	91.8	75.8	13.6	16.0	88.7	11.3	0.7	84.7
6	29.24	4.63	6.36	0.51	416.5	326.6	90.0	75.8	12.1	14.2	88.9	11.1	1.5	87.1
7	28.70	5.07	5.66	0.48	425.0	341.2	83.8	69.0	12.6	14.8	90.2	9.8	1.1	88.7
8	29.00	6.06	4.78	0.45	390.7	326.2	64.5	51.0	11.5	13.5	87.4	12.6	0.4	84.2
9	28.60	5.84	4.91	0.47	407.8	337.8	70.0	55.8	12.1	14.2	84.5	15.5	0.8	82.9
10	32.76	4.75	6.89	0.42	407.6	321.6	86.0	73.6	10.5	12.4	87.9	12.1	2.3	81.8
11	29.19	6.02	4.85	0.46	416.9	347.7	69.2	54.9	12.2	14.3	90.0	10.0	1.8	89.0
12	30.69	5.35	5.73	0.41	394.8	318.6	73.2	60.5	10.8	12.7	87.9	12.1	1.5	80.6

* First month of lactation averaged twelve days.

JERSEY BUTTER RECORD — MONTHLY AVERAGES OF HERD.

FROM 100 POUNDS OF MILK.										MICROSCOPIC DATA.	
MONTH OF LACTATION.	CHURNING.			Pounds of fat in						Relative number of fat globules.	Relative size of fat globules.
	Average temperature during churning.	Hrs. min.	Time of churning.	Per cent of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 85 per cent of butterfat.	
1	Degrees. 61	33	24.17	6.10	0.44	5.66	0.15	5.23	6.15	49	1104
2	61	46	20.06	5.27	0.40	4.87	0.10	4.56	5.36	53	1098
3	62	38	21.20	5.18	0.25	4.93	0.08	4.56	5.36	45	1228
4	60	53	21.52	5.75	0.25	5.50	0.04	5.11	6.01	86	1097
5	61	1 03	20.84	5.68	0.41	5.27	0.04	5.13	6.03	56	1149
6	62	1 11	18.50	5.73	0.52	5.21	0.11	4.90	5.77	76	846
7	64	1 32	19.70	5.72	0.31	5.41	0.04	5.19	6.11	62	1017
8	64	57	20.83	5.80	0.29	5.51	0.04	5.39	6.35	80	733
9	63	55	21.04	5.76	0.39	5.37	0.02	5.17	6.08	83	715
10	65	53	18.78	5.81	0.41	5.40	0.03	5.31	6.24	103	571
11	65	43	16.33	5.39	0.35	5.04	0.03	4.97	5.84	93	594
12	65	36	19.11	5.56	0.25	5.31	0.06	5.09	5.99	113	605

JERSEY BUTTER RECORD — MONTHLY AVERAGES OF HERD — (Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
1*	16.30	4.19	3.89	0.98	341.1	259.7	81.4	60.5	17.8	20.9	92.7	7.3	2.5	85.7
2	18.65	4.17	4.53	0.98	527.3	400.9	126.4	98.5	23.7	27.9	92.4	7.6	1.8	86.7
3	18.65	4.22	4.44	0.94	487.8	372.2	115.6	89.6	22.1	26.0	95.1	4.9	1.5	88.2
4	16.64	3.93	4.31	0.97	452.5	337.4	115.1	88.4	22.7	26.7	95.8	4.2	0.7	88.6
5	16.60	3.94	4.21	0.94	484.3	351.3	123.0	93.8	24.8	29.2	92.9	7.1	0.7	90.5
6	17.22	3.59	4.87	0.86	443.6	320.0	123.6	98.2	21.6	25.4	91.2	8.8	1.9	86.0
7	16.26	3.63	4.53	0.83	408.7	296.1	112.6	87.8	21.1	24.8	94.6	5.4	0.5	91.0
8	15.80	3.77	4.19	0.82	395.7	290.7	105.0	80.0	21.2	25.0	95.2	4.8	0.6	93.2
9	16.44	3.93	4.20	0.81	407.9	304.1	103.8	79.1	21.0	24.7	93.8	6.2	0.3	88.8
10	16.03	3.51	4.60	0.80	395.7	283.0	112.7	91.9	20.8	24.5	93.0	7.0	0.5	91.4
11	17.53	3.27	5.36	0.75	378.4	262.7	115.7	94.1	18.4	21.6	93.7	6.3	0.6	92.4
12	16.90	3.64	4.64	0.74	379.0	274.9	104.1	81.7	19.0	22.4	95.4	4.6	1.1	91.8

* First month of lactation averaged twenty-one days.

AYRSHIRE BUTTER RECORD — MONTHLY AVERAGES OF JUNIETTA PEERLESS.*

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.				FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
		Average temperature during setting.	Average temperature during churning.	Hrs. Min.	Time of churning.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter containing 88 per cent. of butterfat.	Relative number of fat globules.	Relative size of fat globules.
1	February, 1891	Degrees 38	Degrees 64	37	15.87	3.05	0.13	2.92	0.06	2.85	3.34	87	379
2	March, 1891	37	63	....	41	2.97	0.16	2.81	0.02	2.77	3.26	84	392
3	April, 1891	44	64	....	46	2.90	0.31	2.59	0.03	2.50	2.94	87	370
4	May, 1891	47	64	....	42	2.86	0.38	2.48	0.03	2.44	2.87	86	336
5	June, 1891	46	67	....	40	2.77	0.35	2.42	0.02	2.28	2.68	84	362
6	July, 1891	47	67	....	44	2.72	0.76	1.96	0.02	1.93	2.33	121	225
7	August, 1891	47	67	1	52	2.91	0.89	2.02	0.08	1.93	2.38	149	202
8	September, 1891	46	72	....	35	3.35	0.94	2.41	0.01	2.33	2.74	226	156
9	October, 1891	46	69	1	40	3.08	0.53	2.55	0.03	2.36	2.78	271	107
10	November, 1891	.....	69	2	0	2.91	0.10	2.81	0.03	2.75	3.24	194	155

* Junietta Peerless dropped calf at eighth month of pregnancy and her condition has been not entirely normal.

AYRSHIRE BUTTER RECORD — MONTHLY AVERAGES OF JUNIETA PEERLESS — (Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
1*	29.85	5.43	5.50	0.50	193.5	157.9	35.0	29.1	5.5	1.5	95.7	4.3	1.9	93.4
2	30.99	6.02	5.15	0.47	453.5	378.2	75.3	60.7	12.4	14.6	94.5	5.5	0.8	93.4
3	34.23	7.24	4.73	0.45	462.6	398.7	63.9	50.4	11.5	13.5	89.3	10.7	1.2	86.0
4	34.85	7.14	4.88	0.47	512.4	440.6	75.8	51.7	12.5	14.7	86.5	13.5	1.0	85.3
5	37.57	7.30	5.15	0.43	487.0	420.3	66.7	53.8	11.0	12.9	87.5	12.5	0.7	82.5
6	42.92	6.10	7.05	0.37	488.9	408.8	80.1	68.7	9.7	11.4	71.3	28.7	0.9	70.2
7	39.32	6.49	6.15	0.39	486.1	411.2	74.9	62.7	10.4	12.2	69.5	30.5	2.8	66.5
8	36.50	6.95	5.25	0.39	427.1	365.7	61.4	49.7	9.9	11.7	71.9	28.1	0.3	69.6
9	35.97	5.40	6.66	0.39	435.8	355.1	80.7	68.6	10.3	12.1	82.8	17.2	1.0	76.6
10	30.86	5.10	6.05	0.44	410.1	329.7	80.4	67.1	11.3	13.3	96.5	3.4	1.0	94.5

* First month of lactation contains thirteen days.

AYRSHIRE BUTTER RECORD — MONTHLY AVERAGES OF MANTON BELLE.

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.				FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
		Average temperature during setting.	Average temperature during churning.	Time of churning.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 88 per cent. of butterfat.	Relative number of fat globules.	Relative size of fat globules.
1	December, 1890	Degrees, 41	Degrees, 60	Hrs. Min. 19	20.12	4.00	0.56	3.44	0.03	3.28	3.86	41	995
2	January, 1891	41	62	.... 19	16.34	3.10	0.20	2.90	0.06	2.79	3.28	58	539
3	February, 1891	38	62	.... 23	16.47	2.82	0.31	2.51	0.13	2.37	2.79	90	316
4	March, 1891	38	64	.... 28	19.47	3.42	0.39	3.03	0.01	3.01	3.53	83	453
5	April, 1891	44	63	.... 30	21.24	3.40	0.50	2.90	0.01	2.80	3.30	90	409
6	May, 1891	44	65	.... 28	18.06	3.27	0.42	2.85	0.02	2.80	3.30	97	354
7	June, 1891	44	66	.... 37	16.25	3.36	0.24	3.12	0.11	2.89	3.40	71	472
8	July, 1891	46	66	.... 35	17.10	3.22	0.33	2.89	0.09	2.71	3.19	132	253
9	August, 1891	47	68	.... 25	18.27	3.42	0.46	2.96	0.07	2.82	3.32	136	237
10	September, 1891	47	70	.... 32	16.21	3.75	0.80	2.95	0.10	2.79	3.28	137	281
11	October, 1891	.....	67	1 5	17.17	3.84	0.20	3.64	0.50	3.14	3.69	244	217
12	November, 1891	.....	69	.... 30	16.20	4.00	0.08	3.92	0.06	3.86	4.54	206	213

AYRSHIRE BUTTER RECORD — MONTHLY AVERAGES OF MANTON BELLE — (Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in buttermilk.	Per cent. of fat recovered in butter.
1*	26.52	5.85	4.53	0.65	327.8	271.8	56.0	43.6	10.5	12.4	86.0	14.0	0.8	81.8
2	30.64	5.56	5.51	0.69	649.6	532.8	116.8	95.6	18.0	21.2	93.7	6.3	2.2	90.1
3	36.05	6.58	5.48	0.65	655.4	555.8	99.6	81.4	15.5	18.2	88.9	11.1	4.9	83.9
4	29.12	6.41	4.54	0.79	714.2	602.8	111.4	86.9	20.8	24.5	88.9	11.1	0.3	88.2
5	30.35	7.30	4.16	0.76	688.8	594.5	94.3	71.6	19.3	22.7	85.5	14.5	0.3	82.4
6	30.37	6.33	4.80	0.70	664.5	559.5	105.0	83.1	18.6	21.9	87.1	12.9	0.6	85.6
7	29.41	5.21	5.64	0.74	652.1	527.0	125.1	102.9	18.9	22.2	92.8	7.2	3.3	86.1
8	31.54	5.91	5.33	0.67	657.3	546.1	111.2	90.4	17.7	20.8	89.9	10.1	2.9	83.9
9	30.15	6.17	4.88	0.63	588.7	493.3	95.4	75.9	16.6	19.5	86.7	13.3	3.2	82.9
10	30.54	5.50	5.55	0.51	464.7	380.2	84.5	69.3	12.9	15.2	78.8	21.2	2.7	74.5
11	27.10	5.00	5.42	0.46	385.0	308.0	77.0	62.8	12.1	14.2	94.8	5.2	13.0	81.8
12	22.03	4.13	5.33	0.41	271.1	205.5	65.6	53.3	10.5	12.3	98.0	2.0	1.5	96.5

* First month of lactation contains twenty days.

AYRSHIRE BUTTER RECORD — MONTHLY AVERAGES OF MISS FLOW 5TH.*

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.					FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
		Average temperature during setting.	Average temperature during churning.	Time of churning.	Hrs. Min.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 88 per cent. of butterfat.	Relative number of fat globules.	Relative size of fat globules.
7	August, 1890	51	60	....	50	22.74	4.05	1.72	2.33	0.24	1.92	2.26	131	283
8	September, 1890	51	60	1	00	23.72	4.54	2.06	2.48	0.29	1.91	2.24	95	476
9	October, 1890	49	60	1	5	23.36	4.34	1.50	2.84	0.14	2.33	2.74	.....	.....
10	November, 1890	48	63	...	57	21.11	4.95	2.14	2.81	0.36	2.24	2.63	185	268
11	December, 1890	42	62	1	10	13.31	4.80	2.01	2.79	0.23	2.44	2.87	125	402

* First period of lactation.

AYRSHIRE BUTTER RECORD—MONTHLY AVERAGES OF MISS FLOW 5TH*—(Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
7	44.53	9.75	4.57	0.40	551.7	495.1	56.6	44.2	10.5	12.4	57.5	42.5	5.9	47.4
8	44.79	9.52	4.70	0.34	449.5	402.3	47.2	37.2	8.5	10.0	54.7	45.3	6.4	42.2
9	37.08	8.20	4.52	0.37	431.5	378.5	53.0	41.3	9.9	11.7	65.6	34.4	3.3	53.5
10	38.73	7.52	5.15	0.29	333.9	289.5	44.4	35.8	7.3	8.6	56.7	43.3	7.4	45.2
11	35.00	4.94	7.08	0.16	173.9	138.7	35.2	30.2	4.3	5.0	58.3	41.7	4.9	50.8

* First period of lactation.

AYRSHIRE BUTTER RECORD — MONTHLY AVERAGES OF MISS FLOW 5TH.*

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.				FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
		Average temperature during setting.	Average temperature during churning.	Hrs. Min.	Percent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 85 per cent. of butterfat.	Relative number of fat globules.	Relative size of fat globules.
1	March, 1891	Degrees, 38	Degrees, 63	.... 33	19.05	3.97	0.29	3.68	0.03	3.57	4.20	73	570
2	April, 1891	43	63	.... 27	19.08	3.09	0.40	2.69	0.04	2.65	3.12	77	423
3	May, 1891	45	64	.... 35	18.50	2.93	0.65	2.28	0.03	2.34	2.64	103	385
4	June, 1891	48	65	.... 37	17.85	3.16	0.34	2.82	0.12	2.42	2.84	61	549
5	July, 1891	46	66	1 7	17.24	3.19	0.69	2.50	0.04	2.45	2.89	146	243
6	August, 1891	47	68	.... 46	16.13	3.47	0.84	2.63	0.09	2.32	2.73	146	284
7	September, 1891	47	70	.... 29	17.08	3.90	1.68	2.22	0.08	2.09	2.46	128	312
8	October, 1891	.....	66	1 10	19.00	3.73	0.12	3.61	0.30	3.30	3.88	206	183
9	November, 1891	.....	70	.... 46	15.25	3.77	0.08	3.69	0.06	3.63	4.27	175	198

* Second period of lactation.

AYRSHIRE BUTTER RECORD — MONTHLY AVERAGES OF MISS FLOW 5TH* — (Concluded).

	YIELD OF BUTTER.						MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
1	24.19	5.13	4.71	0.72	541.4	435.9	105.5	83.1	19.0	22.4	92.6	7.4	0.8	89.7	0.8	89.7
2	32.10	7.04	4.56	0.60	581.7	499.1	82.6	64.5	15.4	18.1	87.1	12.9	0.7	85.8	0.7	85.8
3	38.00	8.00	4.75	0.53	624.2	546.2	78.0	61.6	13.9	16.4	77.8	23.2	0.8	76.6	0.8	76.6
4	35.26	6.33	5.57	0.57	604.8	509.2	95.6	78.4	14.6	17.2	89.4	10.6	3.9	76.7	3.9	76.7
5	35.15	6.90	5.09	0.52	565.2	484.2	82.0	65.9	13.7	16.1	78.2	21.8	1.4	76.7	1.4	76.7
6	36.56	6.14	5.95	0.47	533.2	446.4	86.8	72.2	12.4	14.6	75.9	24.1	2.7	67.1	2.7	67.1
7	40.77	7.70	5.30	0.37	452.2	393.5	58.7	47.6	9.4	11.1	56.9	43.1	2.0	53.6	2.0	53.6
8	25.77	5.26	5.90	0.57	456.2	369.5	86.7	69.0	15.0	17.7	96.8	3.2	8.7	88.5	8.7	88.5
9	23.42	4.13	5.67	0.58	410.0	310.8	99.2	81.7	14.9	17.5	97.9	2.1	1.5	96.3	1.5	96.3

* Second period of lactation.

AYRSHIRE BUTTER RECORD — MONTHLY AVERAGES OF QUEEN DUCHESS.

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.						FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
		Average temperature during setting.	Average temperature during churning.	Hrs. Min.	Time of churning.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 88 per cent of butterfat.	Relative number of fat globules.	Relative size of fat globules.	
2	August, 1890	Degrees. 48	Degrees. 59	.... 30	....	28.26	4.37	0.51	3.86	0.13	3.62	4.26	56	808	
3	September, 1890	47	61	.... 34	....	22.28	4.48	0.65	3.83	0.16	3.42	4.02	34	1185	
4	October, 1890	49	61	.... 34	....	21.83	3.93	0.37	3.56	0.27	2.94	3.46	87	490	
5	November, 1890	47	61	.... 36	....	21.52	3.95	0.34	3.61	0.24	3.28	3.86	105	380	
6	December, 1890	42	62	.... 50	....	18.34	3.78	0.38	3.40	0.14	3.17	3.73	64	618	
7	January, 1891	39	62	.... 43	....	15.71	3.60	0.29	3.31	0.03	3.23	3.80	.....	.....
8	February, 1891	39	62	.... 36	....	15.09	3.31	0.28	3.03	0.10	2.90	3.44	108	308	
9	March, 1891	37	63	.... 58	....	17.43	3.86	0.16	3.70	0.02	3.56	4.31	98	378	
10	April, 1891	44	64	.... 33	....	19.87	3.71	0.23	3.48	0.02	3.40	4.08	130	287	
11	May, 1891	48	64	.... 25	....	19.69	3.67	0.48	3.19	0.03	3.08	3.63	98	388	
12	June, 1891	47	67	.... 32	....	15.90	3.65	0.20	3.45	0.16	3.26	3.83	86	442	
13	July, 1891	46	66	.... 52	....	16.67	3.68	0.28	3.40	0.12	3.27	3.85	115	316	
14	August, 1891	48	68	.... 50	....	15.27	4.10	0.48	3.62	0.03	3.58	4.22	142	289	
15	September, 1891	47	71	.... 20	....	14.34	3.70	0.67	3.03	0.34	2.69	3.16	203	187	
16	October, 1891	72 45	20.23	5.30	0.12	5.18	0.12	4.38	5.15	320	166	

AYRSHIRE BUTTER RECORD — MONTHLY AVERAGES OF QUEEN DUCHESS — (Concluded).

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MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.							PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.	Per cent. of fat lost in butter.
2	23.73	7.32	3.24	1.10	805.7	695.7	110.0	76.1	28.8	33.9	88.1	11.9	2.8	82.5	2.8
3	24.97	5.75	4.34	0.90	671.1	564.4	116.7	89.8	22.9	26.9	85.4	14.6	3.6	76.4	3.6
4	29.12	6.13	4.75	0.78	701.5	587.2	114.4	90.3	20.5	24.1	90.6	9.4	6.8	75.0	6.8
5	25.90	5.95	4.35	0.85	657.8	547.8	110.0	84.6	21.6	25.4	91.4	8.6	6.0	82.9	6.0
6	26.85	5.32	5.04	0.85	703.9	571.6	132.3	106.1	22.3	26.2	89.7	10.3	3.8	84.0	3.8
7	26.33	4.72	5.58	0.91	747.1	588.8	158.3	130.0	24.7	28.3	92.1	7.9	0.8	89.9	0.8
8	29.11	4.98	5.84	0.80	649.0	518.7	130.3	108.0	19.0	22.3	91.5	8.5	3.0	88.2	3.0
9	23.23	4.57	5.08	0.97	702.2	548.6	153.6	123.4	25.7	30.2	95.9	4.1	0.4	95.1	0.4
10	24.51	5.68	4.31	0.90	662.4	545.8	116.6	89.6	23.0	27.0	94.0	6.0	0.5	93.2	0.5
11	27.61	5.81	4.75	0.81	690.6	571.8	113.8	86.9	21.3	25.0	86.7	13.3	0.8	83.9	0.8
12	26.17	4.61	5.68	0.87	680.9	533.2	147.7	121.7	22.1	26.0	94.7	5.3	4.6	89.1	4.6
13	25.97	4.90	5.30	0.83	673.5	536.0	137.5	111.6	22.0	25.9	92.5	7.5	3.5	88.9	3.5
14	24.06	4.22	5.70	0.75	558.0	425.8	132.2	109.0	19.7	23.2	88.6	11.4	0.9	87.6	0.9
15	31.62	4.71	6.71	0.38	363.3	286.2	77.1	65.6	9.8	11.5	81.9	18.1	9.2	72.7	9.2
16	19.42	3.90	4.98	0.20	122.4	91.0	31.4	25.1	5.4	6.3	97.7	2.3	2.2	82.6	2.2

DEVON BUTTER RECORD — MONTHLY AVERAGES OF GENEVIE'S GIFT.

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.						FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
		Average temperature during setting.	Average temperature during churning.	Hrs. Min.	Time of churning.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 85 per cent. of butterfat.	Relative number of fat globules.	Relative size of fat globules.	
1*	May, 1891	45	64	....	41	16.52	3.25	0.16	3.09	0.01	3.07	3.61	56	575	
2	June, 1891	46	66	....	27	16.95	3.42	0.20	3.22	0.02	3.14	3.69	48	681	
3	July, 1891	46	64	....	35	19.33	3.99	0.49	3.50	0.02	3.43	4.04	119	380	
4	August, 1891	47	67	1	55	18.97	4.68	0.48	4.20	0.01	4.04	4.75	88	522	
5	September, 1891	47	67	....	32	21.24	4.95	0.83	4.12	0.02	3.44	4.06	131	428	
6	October, 1891	.....	66	1	05	22.09	5.58	0.30	5.28	0.04	4.70	5.53	154	363	

* First month of lactation contains fifteen days.

DEVON BUTTER RECORD — MONTHLY AVERAGES OF GENEVIE'S GIFT — (Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
1	27.70	5.35	5.18	0.48	158.8	129.1	29.7	24.0	4.8	5.7	95.1	4.9	0.3	94.5
2	27.25	5.26	5.18	0.50	403.7	327.0	76.7	61.9	12.6	14.8	94.1	5.9	0.7	91.7
3	24.90	5.53	4.50	0.50	383.1	313.8	69.3	53.9	13.1	15.4	87.6	12.4	0.5	85.9
4	21.05	4.52	4.65	0.50	326.3	254.1	72.2	56.7	13.2	15.5	89.7	10.3	0.2	86.3
5	24.67	5.14	4.80	0.36	265.2	213.6	51.6	40.8	9.2	10.8	83.1	16.9	0.4	69.7
6	18.08	4.18	4.32	0.50	277.9	211.4	66.5	51.2	13.0	15.3	94.6	5.4	0.7	94.2

DEVON BUTTER RECORD — MONTHLY AVERAGES OF IONE.

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.				FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.		
		Average temperature during setting.	Average temperature during churning.	Hrs. Min.	Time of churning.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of fat containing 85 per cent. butter-fat.	Relative number of fat globules.	Relative size of fat globules.
1*	March, 1891	Degrees. 38	Degrees. 63	....	28	18.31	3.84	0.25	3.59	0.0	3.57	4.20	81	517
2	April, 1891	44	64	....	35	20.17	4.04	0.57	3.47	0.01	3.42	4.02	88	489
3	May, 1891	48	64	....	36	19.48	3.93	0.57	3.36	0.02	3.21	3.78	78	520
4	June, 1891	46	67	....	46	16.84	3.89	0.64	3.25	0.01	3.17	3.73	65	571
5	July, 1891	47	65	....	46	18.60	3.92	0.72	3.20	0.03	3.15	3.71	173	210
6	August, 1891	47	68	1	10	17.32	4.53	1.36	3.17	0.01	3.13	3.68	134	346
7	September, 1891	47	68	....	53	16.68	4.93	1.21	3.72	0.04	3.25	3.83	186	270
8	October, 1891	46	68	1	31	17.44	4.44	1.04	3.40	0.02	3.38	3.98	241	200
9	November, 1891	.....	69	....	55	23.14	5.57	0.11	5.46	0.09	4.88	5.74	225	250

* First month of lactation contains twenty-four days.

DEVON BUTTER RECORD — MONTHLY AVERAGES OF IONE — (Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
1	23.83	5.10	4.67	0.54	253.0	203.4	49.6	39.0	9.0	10.6	93.4	6.6	0.4	92.9
2	24.87	5.81	4.28	0.58	432.9	358.4	74.5	57.1	14.8	17.4	85.9	14.1	0.3	84.7
3	26.47	5.78	4.58	0.58	473.7	391.8	81.9	64.0	15.2	17.9	85.6	14.4	0.4	81.8
4	26.85	5.17	5.19	0.58	471.3	380.2	91.1	73.5	15.0	17.6	83.6	16.4	0.3	81.6
5	26.97	5.81	4.64	0.55	460.4	381.2	79.2	62.1	14.5	17.1	81.5	18.5	0.9	79.1
6	27.20	5.46	4.98	0.47	392.4	320.5	71.9	57.5	12.2	14.4	70.5	29.5	0.2	69.7
7	26.12	4.48	5.83	0.41	323.5	251.3	72.2	59.8	10.5	12.4	75.3	24.7	0.8	66.0
8	25.13	5.13	4.90	0.45	346.0	278.6	67.4	53.6	11.7	13.8	76.6	23.4	0.5	76.0
9	17.42	4.23	4.12	0.60	311.9	238.2	73.7	55.8	15.2	17.9	98.0	20.0	1.6	87.6

GUERNSEY BUTTER RECORD — MONTHLY AVERAGES OF ORIOLE.

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.				FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.		
		Average temperature during setting.	Average temperature during churning.	Hrs. Min.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 88 per cent. of butterfat.	Relative number of fat globules.	Relative size of fat globules.	
1	December, 1890	Degrees. 41	60	....	20	21.51	6.87	0.12	6.75	0.08	6.57	7.72	.....	.....
2	January, 1891	39	61	....	17	16.82	4.94	0.11	4.83	0.03	4.69	5.52	45	980
3	February, 1891	39	62	....	18	15.41	4.49	0.16	4.33	0.03	4.25	5.13	64	715
4	March, 1891	37	61	....	47	13.88	4.36	0.11	4.25	0.02	4.21	4.96	79	596
5	April, 1891	44	63	....	25	18.43	4.89	0.18	4.71	0.02	4.46	5.24	61	805
6	May, 1891	48	63	....	41	17.42	4.83	0.23	4.60	0.02	4.43	5.21	65	760
7	June, 1891	47	65	....	25	17.81	4.85	0.28	4.57	0.05	4.48	5.27	53	830
8	July, 1891	46	65	....	42	15.54	4.95	0.33	4.62	0.03	4.57	5.37	84	618
9	August, 1891	47	66	....	25	16.85	5.11	0.19	4.92	0.03	4.88	5.74	86	535
10	September, 1891	47	70	....	15	14.78	5.29	0.58	4.71	0.17	4.54	5.34	93	575
11	October, 1891	.....	68	....	52	25.31	5.55	0.08	5.47	0.40	5.07	5.96	110	615
12	November, 1891	.....	70	....	30	25.22	5.35	0.08	5.27	0.33	4.94	5.81	119	517

GUERNSEY BUTTER RECORD — MONTHLY AVERAGES OF ORIOLE — (Concluded).

	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
1*	13.09	3.18	4.12	1.05	305.4	209.4	95.0	72.7	19.8	23.3	98.3	1.7	1.2	95.4
2	18.24	3.50	5.21	0.78	440.0	314.3	125.7	101.6	20.5	24.1	97.8	2.2	0.6	95.1
3	19.50	3.52	5.54	0.88	478.4	342.5	135.9	111.4	20.8	24.5	96.3	3.7	0.6	95.5
4	20.21	3.25	6.22	0.86	536.3	371.3	165.0	138.5	22.5	26.5	97.4	2.6	0.5	96.5
5	19.08	3.90	4.89	0.97	557.3	414.3	143.0	113.8	24.8	29.2	96.3	3.7	0.4	91.1
6	19.27	3.79	5.08	0.98	581.3	427.9	153.4	128.2	25.7	30.2	95.2	4.8	0.4	91.5
7	19.08	3.91	4.83	0.97	558.2	415.5	142.7	113.4	24.9	29.3	94.2	5.8	1.0	92.3
8	18.60	3.38	5.50	1.00	577.9	407.0	170.9	139.8	26.4	31.1	93.5	6.5	0.6	92.5
9	17.75	3.42	5.19	1.02	560.6	396.7	163.9	132.3	26.9	31.6	96.4	3.6	0.6	95.0
10	18.73	3.14	5.96	0.84	475.3	324.0	151.3	125.9	21.6	25.4	89.2	10.8	3.2	85.9
11	16.78	4.63	3.62	1.00	521.8	409.1	112.7	81.6	26.4	31.1	96.6	1.4	7.2	91.4
12	17.21	4.80	3.60	0.96	495.5	392.3	103.2	74.4	24.5	28.8	98.5	1.5	6.1	92.3

* First month of lactation contains twenty-four days.

GUERSEY BUTTER RECORD — MONTHLY AVERAGES OF ROSETTE FORD.

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.				FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
		Average temperature during setting.	Average temperature during churning.	Hrs. Min.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 86 per cent. of butter fat.	Relative number of fat globules.	Relative size of fat globules.
1	November, 1890	47	61	.... 14	21.32	5.40	0.19	5.21	0.26	4.92	5.80	61	928
2	December, 1890	41	60	.... 20	19.45	5.32	0.26	5.06	0.06	4.82	5.67	46	1147
3	January, 1891	42	62	.... 46	17.81	4.74	0.33	4.41	0.03	4.22	4.96	39	1193
4	February, 1891	38	65	.... 25	15.82	4.90	0.28	4.62	0.02	4.52	5.32	72	722
5	March, 1891	37	61	.... 42	19.01	5.12	0.22	4.90	0.02	4.86	5.72	66	870
6	April, 1891	43	61	.... 47	20.06	5.02	0.50	4.52	0.02	4.40	5.18	75	714
7	May, 1891	44	64	.... 38	16.25	4.81	0.65	4.16	0.02	3.98	4.68	152	338
8	June, 1891	45	65	.... 42	16.82	4.76	0.41	4.35	0.03	4.29	5.04	93	517
9	July, 1891	47	65	.... 27	15.47	4.73	0.49	4.24	0.07	4.16	4.89	165	281
10	August, 1891	47	68	.... 40	17.42	4.98	0.79	4.19	0.03	4.16	4.89	115	278
11	September, 1891	47	67	.... 30	21.82	5.71	0.42	5.29	0.04	4.47	5.26	162	441
12	October, 1891	.....	70	.... 22	19.66	5.92	0.52	5.40	0.12	5.27	6.20	116	682
13	November, 1891	.....	68	.... 45	27.04	6.11	0.08	6.03	0.31	5.62	6.61	146	444

GUERNSEY BUTTER RECORD—MONTHLY AVERAGES OF ROSETTE FORD—(Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.			MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of fat in milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.
1*	17.85	4.10	4.35	0.73	195.4	147.8	47.6	36.7	9.3	10.9	96.3	3.7	1.4
2	17.72	3.81	4.65	0.98	543.4	400.4	143.0	112.3	26.1	30.7	95.2	4.8	1.0
3	20.13	4.00	5.03	0.90	561.5	421.1	140.4	112.5	23.7	27.9	93.0	7.0	0.5
4	18.80	3.42	5.50	0.91	482.3	341.3	141.0	115.3	21.8	25.7	94.3	5.7	0.4
5	17.41	3.85	4.52	0.91	501.9	371.5	130.4	101.5	24.6	28.9	95.8	4.2	0.4
6	19.31	4.46	4.33	0.83	478.8	371.4	107.4	82.6	21.1	24.8	90.0	10.0	0.3
7	21.39	3.90	5.48	0.78	515.9	383.6	132.3	108.2	20.5	24.1	86.5	13.5	0.4
8	19.84	3.88	5.12	0.80	476.1	353.4	122.7	98.7	20.4	24.0	91.6	8.4	0.6
9	20.43	3.65	5.60	0.73	463.7	336.7	127.0	104.3	19.3	22.7	89.7	10.3	1.5
10	20.45	4.17	4.90	0.71	452.0	343.6	108.4	86.3	18.8	22.1	84.3	15.7	0.6
11	19.02	4.13	4.61	0.67	380.4	288.3	92.1	72.1	17.0	20.0	92.9	7.1	0.7
12	16.13	3.64	4.43	0.77	386.9	280.6	106.3	82.3	20.4	24.0	91.2	8.8	2.0
13	15.13	4.48	3.38	0.77	347.3	269.5	77.8	54.8	19.6	23.0	98.7	1.3	5.1

* First month of lactation contains fifteen days.

AMERICAN HOLDERNESS BUTTER RECORD — MONTHLY AVERAGES OF NELLIE 6TH.

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.				FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.		
		Average temperature during settling.	Average temperature during churning.	Hrs. Min.	Time of churning.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in butter-milk.	Pounds of fat in butter.	Pounds of butter containing 86 per cent. of butterfat.	Relative number of fat globules.	Relative size of fat globules.
1	September, 1890	45	61	....	47	23.14	4.78	0.67	4.11	0.12	3.78	4.44	.....	.....
2	October, 1890	48	61	....	55	20.96	3.54	0.48	3.06	0.04	2.85	3.38	79	609
3	November, 1890	49	60	....	51	18.44	3.36	0.44	2.92	0.05	2.67	3.14	.....	.....
4	December, 1890	41	64	1	19	14.94	3.25	0.36	2.89	0.04	2.81	3.30	109	407
5	January, 1891	38	66	1	7	15.82	3.30	0.44	2.85	0.02	2.76	3.25	83	279
6	February, 1891	38	67	1	0	15.75	3.48	0.33	3.15	0.04	3.10	3.66	103	339
7	March, 1891	38	66	2	11	15.05	3.28	0.28	3.00	0.02	2.95	3.47	114	282
8	April, 1891	43	61	1	15	16.39	3.52	0.55	2.97	0.01	2.88	3.38	99	381
9	May, 1891	45	65	1	2	17.68	3.56	0.63	2.93	0.02	2.87	3.38	119	285
10	June, 1891	45	67	1	16	11.58	3.26	0.54	2.72	0.05	2.31	2.72	119	269

AMERICAN HOLDERNESS BUTTER RECORD — MONTHLY AVERAGES OF NELLIE 6TH — (Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.						MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.	Per cent. of fat lost in milk.	Per cent. of fat recovered in butter.
1*	22.44	5.53	4.00	0.59	240.3	197.6	42.8	32.1	9.1	10.7	86.6	13.4	2.6	79.7	2.6	79.7
2	30.07	6.76	4.45	0.55	513.9	437.9	76.0	59.0	14.5	17.0	86.5	13.5	1.1	80.7	1.1	80.7
3	31.96	6.29	5.08	0.55	531.9	447.4	84.5	67.9	14.1	16.6	87.0	13.0	1.6	79.3	1.6	79.3
4	30.42	5.18	5.87	0.48	455.4	367.5	87.9	72.9	12.8	15.0	83.9	11.2	1.1	86.5	1.1	86.5
5	39.72	5.53	5.55	0.50	474.6	390.3	84.2	68.8	13.1	15.4	89.6	13.4	0.8	83.9	0.8	83.9
6	27.32	5.00	5.46	0.55	420.1	336.1	84.0	68.6	13.1	15.4	90.5	9.5	1.1	89.3	1.1	89.3
7	28.90	5.00	5.78	0.45	400.6	320.5	80.1	66.3	11.7	13.8	91.5	8.5	0.7	89.9	0.7	89.9
8	29.64	5.50	5.39	0.41	364.2	298.0	66.2	53.9	10.5	12.3	84.2	15.8	0.4	81.7	0.4	81.7
9	29.62	6.02	4.92	0.42	387.4	323.1	64.3	51.2	11.1	13.1	82.5	17.5	0.4	80.7	0.4	80.7
10	36.76	4.24	8.67	0.17	183.1	140.0	43.1	38.1	4.3	5.0	83.4	16.6	1.5	70.9	1.5	70.9

* First month of lactation contains eighteen days.

AMERICAN HOLDERNESS BUTTER RECORD — MONTHLY AVERAGES OF MAGGIE 6TH.

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.				FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
		Average temperature during setting.	Average temperature during churning.	Hrs. Min.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 88 per cent. of butterfat.	Relative number of fat globules.	Relative size of fat globules.
1	September, 1890	Degrees, 42	Degrees, 59	1 25	23.31	5.80	0.59	4.71	0.09	4.51	5.31	.....	.....
2	October, 1890	48	60	....	20.61	3.68	0.37	3.31	0.05	3.09	3.64	55	713
3	November, 1890	48	60	....	19.54	3.38	0.33	3.05	0.03	2.87	3.38	68	607
4	December, 1890	42	59	1 13	17.63	3.63	0.49	3.14	0.03	3.06	3.60	65	594
5	January, 1891	44	64	1 42	14.60	3.36	0.41	2.95	0.02	2.87	3.37	75	514
6	February, 1891	38	64	1 51	11.83	3.18	0.40	2.78	0.06	2.70	3.17	104	308
7	March, 1891	38	66	1 14	15.54	3.41	0.38	3.03	0.06	2.98	3.51	107	376
8	April, 1891	44	64	1 8	20.66	3.46	0.33	3.13	0.02	3.00	3.53	89	376
9	May, 1891	45	66	....	17.63	3.62	0.49	3.13	0.04	3.07	3.61	112	344
10	June, 1891	46	67	1 30	17.58	3.62	0.28	3.34	0.11	2.96	3.48	93	403
11	July, 1891	46	69	1 32	17.95	3.31	0.33	2.98	0.06	2.91	3.43	146	235
12	August, 1891	47	69	....	16.15	3.45	0.42	3.03	0.13	2.78	3.27	160	246
13	September, 1891	47	67	....	17.28	3.78	0.67	3.11	0.06	2.96	3.48	164	286
14	October, 1891	.....	67	1 12	20.22	3.72	0.12	3.60	0.30	3.21	3.78	147	263
15	November, 1891	.....	72	....	11.98	3.15	0.07	3.08	0.08	3.00	3.53	212	113

AMERICAN HOLDERNESS BUTTER RECORD—MONTHLY AVERAGES OF MAGGIE 6TH—(Concluded).

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MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
1*	18.83	4.95	3.80	0.54	61.2	43.8	13.4	9.1	2.8	3.3	88.9	11.1	1.7	85.1
2	27.97	6.21	4.50	0.65	568.5	477.0	91.5	71.2	17.3	20.3	89.8	10.2	1.4	83.9
3	29.76	6.41	4.64	0.65	585.3	494.0	91.3	71.7	16.8	19.6	90.0	10.0	2.5	84.9
4	27.91	5.58	5.00	0.61	522.9	429.3	93.7	75.0	15.6	18.7	85.5	13.5	0.9	84.3
5	29.75	4.98	5.97	0.53	493.2	394.2	99.0	82.4	14.1	16.6	87.8	12.2	0.5	85.5
6	31.55	4.25	7.42	0.47	413.0	315.9	97.1	84.0	11.1	13.1	87.3	12.7	1.9	84.9
7	28.49	5.13	5.38	0.53	449.4	361.8	87.6	71.3	13.9	16.3	88.9	11.1	1.6	87.4
8	28.33	6.62	4.28	0.49	417.1	354.1	63.0	48.3	12.5	14.7	90.6	9.4	0.4	86.7
9	27.71	5.65	4.90	0.50	428.1	352.3	75.8	60.3	13.2	15.5	86.5	13.5	1.1	85.0
10	28.75	5.26	5.46	0.47	407.6	330.1	77.5	63.4	12.0	14.1	92.3	7.7	3.0	81.8
11	29.19	6.02	4.85	0.46	416.9	347.7	69.2	54.9	12.2	14.3	90.0	10.0	1.8	88.0
12	30.69	5.35	5.73	0.41	391.8	318.6	73.2	60.5	10.8	12.7	87.9	12.1	1.5	80.6
13	28.81	5.56	5.18	0.37	318.2	261.0	57.2	46.2	9.4	11.0	82.1	17.9	1.6	78.3
14	26.45	5.62	4.71	0.39	320.1	263.1	57.0	44.9	10.3	12.1	96.8	3.2	8.0	86.3
15	28.33	3.89	7.28	0.32	267.7	198.9	68.8	59.4	8.0	9.4	97.8	2.2	2.5	95.2

* First month of lactation contains six days.

HOLSTEIN-FRIESIAN BUTTER RECORD.—MONTHLY AVERAGES OF ESEL 2D.

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.				FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
		Average temperature during setting.	Average temperature during churning.	Hrs. Min.	Time of churning.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of butter containing 88 per cent. of butterfat.	Relative number of fat globules.	Relative size of fat globules.
2	August, 1890	48	60	40	22.14	3.59	0.58	3.01	0.40	2.33	2.74	53	640
3	September, 1890	47	61	7	20.02	3.86	0.78	3.08	0.17	2.77	3.26	67	576
4	October, 1890	49	62	1	19.99	3.64	0.57	3.07	0.21	2.43	2.86	132	256
5	November, 1890	48	60	1	20.40	3.66	1.06	2.60	0.11	2.43	2.86	95	396
6	December, 1890	42	63	2	17.74	3.92	0.52	3.40	0.07	3.27	3.85	66	595
7	January, 1891	39	63	1	19.48	3.55	0.53	3.02	0.03	2.91	3.42	94	340
8	February, 1891	38	64	1	19.49	3.73	0.60	3.13	0.03	3.07	3.62	123	310
9	March, 1891	37	65	2	20.47	3.90	0.41	3.49	0.01	3.85	3.94	132	384
10	April, 1891	44	72	5	19.13	3.96	1.22	2.73	0.05	2.60	3.06	168	248
11	May, 1891	48	67	3	17.00	3.72	0.96	2.76	0.03	2.62	3.09	166	239
12	June, 1891	47	68	38	18.71	3.45	0.54	2.91	0.16	2.39	2.81	120	300
13	July, 1891	46	66	1	14.07	2.98	0.70	2.28	0.11	2.06	2.42	150	197
14	August, 1891	48	67	49	14.03	2.92	0.76	2.16	0.09	2.00	2.35	149	215
15	September, 1891	48	71	30	23.08	3.87	1.03	2.81	0.08	1.68	1.97	173	254
16	October, 1891	.....	72	2	13.31	3.30	0.08	3.22	0.99	2.90	3.41	233	147
17	November, 1891	.....	71	2	16.20	3.11	0.08	3.03	0.19	2.64	3.11	194	174

HOLSTEIN-FRIESIAN BUTTER RECORD — MONTHLY AVERAGES OF ESEL 2D — (Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
2	36.50	7.36	4.97	0.78	884.0	764.0	120.0	95.8	20.6	24.2	83.8	16.2	11.2	64.8
3	30.93	6.47	4.76	0.97	895.0	766.7	138.3	109.3	24.7	29.0	79.9	20.1	3.2	71.7
4	34.86	6.49	5.51	0.68	780.6	680.3	120.3	98.5	18.5	21.8	84.4	15.6	7.0	66.9
5	34.86	7.87	4.50	0.71	750.5	635.1	95.4	74.2	18.0	21.2	71.0	29.0	3.1	66.2
6	25.97	5.21	4.98	0.90	725.1	586.0	139.1	111.5	23.5	27.6	86.7	13.3	1.9	83.5
7	29.21	6.41	4.56	0.87	790.1	666.9	133.2	96.2	23.0	27.0	85.5	14.5	0.8	82.5
8	27.61	6.41	4.45	0.85	655.8	550.2	105.6	81.9	20.1	23.7	84.0	16.0	0.9	82.4
9	25.40	5.85	4.37	0.81	638.1	529.0	109.1	84.1	21.2	25.0	89.2	10.8	0.3	85.6
10	32.68	7.00	4.69	0.56	544.7	467.1	77.6	61.0	14.1	16.6	69.0	31.0	3.0	65.7
11	32.36	6.10	5.30	0.56	560.6	468.7	91.9	74.6	14.7	17.3	74.3	25.7	0.7	70.7
12	35.42	6.45	5.54	0.64	683.0	577.2	105.8	86.5	16.4	19.3	84.1	15.9	4.8	69.3
13	41.38	6.17	6.71	0.58	741.6	621.4	120.2	102.3	15.2	17.9	76.1	23.9	3.8	69.1
14	43.38	6.50	6.67	0.49	662.0	560.2	101.8	86.5	13.0	15.3	75.2	24.8	2.3	69.9
15	51.08	8.13	6.28	0.40	612.9	537.5	75.4	63.4	10.2	12.0	73.2	26.8	2.3	43.4
16	29.50	4.13	7.14	0.67	617.2	467.8	149.4	138.5	17.8	20.9	97.7	2.3	6.1	87.8
17	32.15	5.35	6.01	0.59	553.8	458.4	105.4	87.8	15.0	17.6	97.4	2.6	6.1	84.9

HOLSTEIN-FRIESIAN BUTTER RECORD — MONTHLY AVERAGES OF TOLMA ARTIS.*

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.						FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
		Average temperature during setting.	Average temperature during churning.	Hrs. Min.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 85 per cent. of butter fat.	Relative number of fat globules.	Relative size of fat globules.		
4	August, 1890	51	60	31	23.59	3.63	0.90	2.73	0.13	2.18	2.56	93	314		
5	September, 1890	51	60	44	18.82	3.15	1.83	1.32	0.14	1.01	1.19	50	644		
6	October, 1890	49	60	57	19.85	3.19	0.87	2.32	0.11	2.07	2.43	.....	.....
7	November, 1890	48	61	32	19.86	4.80	0.46	4.34	0.04	3.14	3.69	100	509		
8	December, 1890	42	62	1 2	15.88	3.71	0.43	3.28	0.04	3.11	3.65	112	344		
9	January, 1891	39	67	1 44	12.49	3.50	0.65	2.85	0.02	2.76	3.24	104	289		
10	February, 1891	38	65	2 15	7.78	3.35	0.46	2.89	0.10	2.78	3.27	182	186		

* First period of lactation. Tolma Artis was in an abnormal condition much of the time, and the results are, therefore, excluded from the averages for the herd.

HOLSTEIN-FRIESIAN BUTTER RECORD—MONTHLY AVERAGES OF TOLMA ARTIS.*—(Concluded).

	YIELD OF BUTTER.				MONTHLY YIELD OF DAILY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
MONTH OF LACTATION.														
4	46.39	8.95	5.18	0.59	841.8	747.8	9.4	75.9	15.4	18.1	72.5	27.5	3.9	57.5
5	84.41	14.30	5.90	0.29	727.3	676.4	50.9	42.3	7.3	8.6	41.7	58.3	4.5	31.2
6	41.81	8.33	5.02	0.34	447.7	394.0	53.7	43.0	9.1	10.7	72.6	27.4	3.6	64.6
7	27.06	4.56	5.93	0.30	241.8	188.8	53.0	44.0	7.7	9.0	90.5	9.5	9.5	65.5
8	27.38	4.74	5.77	0.36	309.7	244.4	65.3	54.0	9.6	11.3	88.5	11.5	1.2	83.8
9	30.82	4.46	6.91	0.25	237.2	184.0	53.2	45.5	6.5	7.7	81.4	11.6	0.6	78.9
10	30.58	2.70	11.30	0.10	80.7	50.8	19.0	27.3	2.2	2.6	86.3	13.7	3.0	83.0

* First period of lactation.

HOLSTEIN-FRIESIAN BUTTER RECORD — MONTHLY AVERAGES OF TOLMA ARTIS.*

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.				FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
		Average temperature during setting.	Average temperature during churning.	Time of churning.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 86 per cent. of butter fat.	Relative number of fat globules.	Relative size of fat globules.
1	June, 1891	Degrees, 46	Degrees, 64	Hrs. Min. 29	13.95	2.55	0.15	2.40	0.05	2.36	2.77	71	404
2	July, 1891	47	66	.... 38	13.68	2.33	0.21	2.12	0.05	1.97	2.82	107	235
3	August, 1891	47	68	.... 32	11.91	2.12	0.75	1.37	0.01	1.36	1.60	122	206
4	September, 1891	47	67	.... 33	15.12	2.77	0.82	1.95	0.01	1.63	1.92	105	293
5	October, 1891	.....	70	.... 30	14.97	2.92	0.21	2.71	0.07	2.73	3.10	145	221
6	November, 1891	.....	68	.... 35	15.32	2.90	0.08	2.82	0.05	2.77	3.26	188	191

* Second period of lactation.

AMERICAN HOLDERNESS BUTTER RECORD—MONTHLY AVERAGES OF TOLMA ARTIS*—(Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
1	36.48	5.81	6.28	0.82	895.8	741.6	154.2	129.6	20.9	24.6	94.1	5.9	1.9	92.3
2	43.22	6.45	6.70	0.72	966.5	816.7	149.8	127.5	19.0	22.3	90.8	9.2	2.0	84.6
3	64.30	8.69	7.40	0.44	880.5	779.2	101.3	87.6	11.6	13.7	64.2	35.8	0.5	63.6
4	52.08	7.75	6.72	0.46	723.4	630.1	93.3	79.4	11.8	13.9	70.8	29.2	0.4	58.9
5	39.23	5.53	6.00	0.74	765.8	627.3	138.5	115.5	19.6	23.0	92.1	7.9	2.4	89.7
6	*30.67	5.43	5.65	0.80	736.6	601.0	135.6	111.6	20.4	24.0	97.2	2.8	1.7	96.5

* Second period of lactation.

JERSEY BUTTER RECORD — MONTHLY AVERAGES OF BARBARA ALLEN.

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.				FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
		Average temperature during settling.	Average temperature during churning.	Time of churning.	Per cent of fat in cream.	Pounds of fat in milk.	Pounds of fat in sklm-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 86 per cent of butterfat.	Relative number of fat globules.	Relative size of fat globules.
2.....	September, 1890	Degrees. 47	Degrees. 61	Hrs. Min. 1 7	18.91	4.91	0.51	4.40	0.11	4.14	4.87	.....	.....
3.....	October, 1890	49	62	.... 47	20.90	5.16	0.29	4.87	0.10	4.52	5.31	42	1216
4.....	November, 1890	48	61	.... 40	21.08	5.33	0.18	5.15	0.04	4.48	5.27	123	984
5.....	December, 1890	41	63	.... 35	18.43	5.55	0.24	5.31	0.02	5.17	6.08	61	1266
6.....	January, 1891	39	63	.... 27	14.42	5.70	0.31	5.39	0.05	5.18	6.09	49	1127
7.....	February, 1891	38	65	.... 33	17.63	5.48	0.38	5.10	0.04	5.02	5.91	54	1011
8.....	March, 1891	37	65	.... 51	16.25	5.38	0.17	5.21	0.02	5.13	6.03	85	603
9.....	April, 1892	43	61	.... 58	23.85	5.46	0.25	5.21	0.02	5.08	5.98	80	728
10.....	May, 1892	44	64	.... 47	19.53	5.38	0.46	4.87	0.02	4.74	5.57	103	542
11.....	June, 1891	45	66	.... 37	15.06	4.90	0.14	4.76	0.04	4.66	5.48	81	610
12.....	July, 1891	47	64	.... 32	19.37	5.15	0.19	4.96	0.11	4.83	5.68	115	445
13.....	August, 1891	47	68	.... 37	17.20	5.16	0.23	4.93	0.02	4.91	5.77	81	599
14.....	September, 1891	47	66	.... 42	17.47	5.57	0.33	5.24	0.03	5.18	6.09	118	471
15.....	October, 1891	.....	70	.... 20	19.31	5.41	0.21	5.20	0.09	5.11	6.01	154	358
16.....	November, 1891	.....	69	.... 55	28.02	6.16	0.08	6.08	0.22	5.87	6.91	253	301

JERSEY BUTTER RECORD—MONTHLY AVERAGES OF BARBARA ALLEN—(Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent of fat recovered in cream.	Per cent of fat lost in skim-milk.	Per cent of fat lost in butter-milk.	Per cent of fat recovered in butter.
2	20.67	4.37	4.73	0.84	519.0	400.0	119.0	93.9	21.3	25.1	89.7	10.3	2.3	84.5
3	18.96	4.13	4.59	0.85	501.7	380.2	121.5	95.0	22.5	26.5	94.3	5.7	2.0	87.5
4	19.05	4.03	4.66	0.87	494.2	373.2	121.0	95.1	22.0	25.9	95.6	3.4	0.8	84.0
5	16.49	3.45	4.79	0.88	450.6	319.6	131.0	103.7	23.2	27.3	95.7	4.3	0.4	93.3
6	16.41	2.67	6.15	0.98	495.2	309.8	185.4	155.2	25.7	30.2	94.6	5.4	0.9	91.0
7	16.94	3.43	4.94	0.86	409.9	290.4	119.5	95.3	20.6	24.2	93.0	7.0	0.4	91.6
8	16.63	3.13	5.31	0.85	437.4	298.0	139.4	113.1	22.4	26.3	96.8	3.2	0.4	95.2
9	16.74	4.60	3.64	0.83	418.1	327.2	90.9	65.0	21.2	24.9	96.5	4.5	0.3	93.1
10	17.98	4.00	4.49	0.76	421.7	316.3	105.4	81.9	20.0	23.5	91.4	8.6	0.4	88.8
11	18.26	3.16	5.78	0.85	468.3	320.1	148.2	122.6	21.8	25.6	97.2	2.8	0.5	95.2
12	17.66	3.90	4.53	0.86	471.7	350.7	121.0	94.3	22.7	26.7	96.4	3.6	2.2	93.8
13	17.40	3.50	4.97	0.82	444.0	317.0	127.0	101.5	21.7	25.5	95.5	4.5	0.4	95.0
14	16.43	3.83	4.90	0.68	337.1	235.9	101.2	80.7	17.4	20.5	94.1	5.9	0.4	92.9
15	16.64	3.71	4.48	0.71	367.4	268.4	99.0	76.9	18.8	22.1	96.1	3.8	1.6	94.5
16	14.47	4.61	3.14	0.79	340.7	266.8	73.9	50.4	20.0	23.5	98.7	1.3	3.5	95.2

JERSEY BUTTER RECORD--MONTHLY AVERAGES OF GILDERBLOOM.

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.				FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.		
		Average temperature during settling.	Average temperature during churning.	Hrs. Min.	Time of churning.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter containing 86 per cent. of butterfat.	Relative number of fat globules.	Relative size of fat globules.	
1	September, 1890	46	61	....	33	24.17	6.10	0.44	5.66	0.15	5.23	5.15	49	1104
2	October, 1890	48	61	....	25	21.21	5.62	0.28	5.34	0.08	4.99	5.87	53	1098
3	November, 1890	48	62	....	28	21.49	5.19	0.20	4.99	0.06	4.60	5.41	48	1239
4	December, 1890	42	59	1	5	21.96	6.16	0.31	5.85	0.04	5.74	6.75	48	1209
5	January, 1891	44	61	....	53	17.77	5.47	0.30	5.17	0.02	5.11	6.01	48	1208
6	February, 1891	38	62	....	52	14.85	5.97	0.29	5.08	0.09	4.97	5.84	82	687
7	March, 1891	38	65	1	47	18.90	5.68	0.19	5.49	0.02	5.34	6.28	81	766
8	April, 1891	44	64	....	37	21.60	5.61	0.20	5.41	0.02	5.37	6.32	70	834
9	May, 1891	45	65	....	30	18.39	5.63	0.38	5.25	0.02	4.98	5.85	88	637
10	June, 1891	46	65	....	42	18.59	5.65	0.24	5.40	0.04	5.36	6.30	107	467
11	July, 1891	46	66	....	42	15.94	4.91	0.51	4.40	0.03	4.35	5.11	120	414
12	August, 1891	47	67	....	42	17.29	4.97	0.36	4.61	0.03	4.58	5.39	161	329
13	September, 1891	47	70	....	34	13.95	5.41	0.46	4.95	0.25	4.69	5.52	144	378

JERSEY BUTTER RECORD—MONTHLY AVERAGES OF GILDERBLOOM—(Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to one pound of cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter-milk.	Per cent. of fat recovered in butter.
1*	16.30	4.19	3.89	0.99	341.1	259.7	81.4	60.5	17.8	20.9*	92.7	7.3	2.5	85.7
2	17.09	3.96	4.32	1.01	535.6	400.4	135.2	103.9	26.6	31.3	95.0	5.0	1.4	88.9
3	18.50	4.31	4.29	0.85	473.8	363.9	109.9	84.3	21.8	25.6	95.9	4.1	1.1	88.8
4	14.83	3.76	3.93	0.89	410.7	301.4	109.3	79.6	23.5	27.7	94.9	5.1	0.7	93.2
5	16.66	3.42	4.88	0.83	428.4	303.1	125.3	99.8	21.7	25.5	94.4	5.6	0.4	93.3
6	17.17	2.98	5.77	0.72	343.2	225.7	117.5	97.5	17.0	20.0	94.5	5.5	1.6	92.4
7	16.00	3.45	4.90	0.73	342.0	242.9	99.1	78.9	17.2	20.2	96.7	3.3	0.4	94.4
8	15.83	4.00	3.95	0.65	307.1	230.3	86.8	57.4	16.5	19.4	96.5	2.5	0.4	95.8
9	17.10	3.50	4.88	0.67	356.8	254.8	102.0	81.1	27.8	29.9	93.2	6.8	0.4	88.4
10	15.86	3.45	4.60	0.66	315.5	224.1	91.4	71.5	16.9	19.9	95.8	4.2	0.7	94.9
11	19.91	3.62	5.50	0.49	361.0	217.9	83.1	68.0	12.8	15.1	90.0	10.0	0.7	89.0
12	18.55	3.76	4.93	0.44	265.5	187.5	68.0	54.2	11.7	13.8	92.8	7.2	0.6	92.1
13	18.24	2.83	6.44	0.37	204.5	132.2	72.3	61.1	9.5	11.2	91.5	8.5	4.8	86.7

*First month of lactation contains twenty-one days.

JERSEY BUTTER RECORD — MONTHLY AVERAGES OF COUNTESS FLAVIA.

MONTH OF LACTATION.	Date.	CREAMING AND CHURNING.				FROM 100 POUNDS OF MILK.						MICROSCOPIC DATA.	
		Average temperature during setting.	Average temperature during churning.	Time of churning.	Per cent. of fat in cream.	Pounds of fat in milk.	Pounds of fat in skim-milk.	Pounds of fat in cream.	Pounds of fat in buttermilk.	Pounds of fat in butter.	Pounds of butter containing 86 per cent. of butter fat.	Relative number of fat globules.	Relative size of fat globules.
5	August, 1890	Degrees, 51	Degrees, 60	Hrs. Min. 1 40	26.32	6.01	0.68	5.33	0.09	5.10	6.00	58	984
6	September, 1890	51	62	2 15	26.23	6.12	0.95	5.17	0.20	4.56	5.37	96	724
7	October, 1890	49	63	2 15	22.58	5.99	0.85	5.64	0.05	5.22	6.14	52	1273
8	November, 1890	49	64	1 23	24.65	6.42	0.49	5.93	0.07	5.69	6.69	85	759
9	December, 1890	42	63	1 17	20.88	6.18	0.61	5.67	0.02	5.45	6.42	80	780
10	January, 1891	39	66	1 11	18.23	6.45	0.52	5.93	0.02	5.84	6.86	99	703
11	February, 1891	38	63	.... 50	17.99	6.35	0.40	5.95	0.03	5.89	6.93	78	757
12	March, 1891	38	65	1 3	20.68	6.56	0.19	6.37	0.03	5.87	6.90	63	1040
13	April, 1891	43	65	.... 57	20.94	6.30	0.19	6.11	0.02	5.86	6.89	69	939
14	May, 1891	46	66	.... 51	20.86	5.87	0.49	5.38	0.04	5.27	6.20	70	908
15	June, 1891	46	65	.... 33	18.50	5.86	0.20	5.66	0.02	5.31	6.25	60	909
16	July, 1891	47	65	.... 32	18.15	5.83	0.17	5.71	0.05	5.66	6.66	111	508
17	August, 1891	47	68	1 13	21.84	6.32	0.37	5.95	0.05	5.90	6.94	110	612
18	September, 1891	47	67	.... 33	18.59	8.07	0.66	7.41	0.02	7.38	8.68	268	316

JERSEY BUTTER RECORD — MONTHLY AVERAGES OF COUNTESS FLAVIA — (Concluded).

MONTH OF LACTATION.	YIELD OF BUTTER.				MONTHLY YIELD OF DAIRY PRODUCTS.						PERCENTAGES OF FAT RECOVERED AND LOST.			
	Pounds of milk to one pound of butter.	Pounds of milk to cream.	Pounds of cream to one pound of butter.	Pounds of butter per day.	Pounds of whole milk.	Pounds of skim-milk.	Pounds of cream.	Pounds of butter-milk.	Pounds of fat in butter.	Pounds of butter.	Per cent. of fat recovered in cream.	Per cent. of fat lost in skim-milk.	Per cent. of fat lost in butter milk.	Per cent. of fat recovered in butter.
5	16.65	4.94	3.97	1.11	574.0	457.8	116.2	81.8	29.2	34.4	88.7	11.3	1.5	84.9
6	18.77	5.13	3.56	0.87	492.4	396.4	96.0	69.8	22.2	26.2	84.5	15.5	3.3	74.5
7	16.43	4.00	4.11	0.93	474.1	355.6	118.5	89.7	24.5	28.8	94.1	5.9	0.8	86.9
8	14.94	4.17	3.58	0.99	442.7	336.6	106.1	76.5	25.2	29.6	92.4	7.6	1.1	88.6
9	15.64	3.68	4.26	0.93	448.9	326.9	122.0	93.3	24.4	28.7	91.8	8.2	0.3	85.0
10	14.62	3.07	4.76	0.99	449.8	303.3	146.5	115.7	26.2	30.8	91.9	8.1	0.3	90.6
11	14.43	3.03	4.76	0.91	365.8	245.1	120.7	95.4	21.5	25.3	93.8	6.2	0.5	92.9
12	14.48	3.25	4.46	0.91	409.8	283.7	126.1	97.8	24.1	28.3	97.1	2.9	0.5	89.5
13	14.51	3.42	4.24	0.94	409.6	289.8	119.8	91.6	24.0	28.2	97.0	3.0	0.3	93.0
14	16.19	3.85	4.21	0.86	432.8	320.4	112.4	85.7	22.7	26.7	91.7	8.3	0.7	89.8
15	16.04	3.27	4.90	0.84	406.2	282.0	124.2	98.9	21.5	25.3	96.5	3.5	0.3	90.8
16	15.03	3.18	4.73	0.88	408.1	279.8	128.3	101.2	23.0	27.1	97.1	2.9	0.8	96.2
17	14.42	3.68	3.92	0.85	377.9	275.2	102.7	76.5	22.3	26.2	94.4	5.6	0.8	93.5
18	11.51	2.51	4.58	0.76	261.9	157.6	104.3	81.5	19.4	22.8	91.9	8.1	0.2	91.4

XV. COMPARISON OF DAIRY BREEDS OF CATTLE WITH REFERENCE TO PRODUCTION OF CHEESE.

The results of our investigation of cheese appear to indicate that the yield of cheese from a given amount of milk depends, when the conditions of manufacture are fairly uniform, upon the following factors :

- 1st. The amount of fat in the milk.
- 2d. The amount of casein and albumen in the milk.
- 3d. The amount of fat *relative* to the amount of casein and albumen.

The indications are that, when we shall have continued our experiments on a more extensive plan, we shall, in all probability, be able to calculate very closely from the composition of the milk the amount of cheese that can be made from a given quantity of it; and possibly we may be able to do this accurately enough for all commercial purposes from knowing only the amount of fat contained in the milk.

Basing our calculations upon the results already secured, we will apply them to estimating the amount of cheese that could be made from the milk of the different breeds under investigation. For this purpose, we assume the following as a basis for calculating the cheese-producing power or efficiency of the different kinds of milk :

1. The loss of fat is made seven per cent. of the milk-fat, when the milk contains, on an average, 1.20 pounds of fat or less for one pound of casein and albumen, as in the case of the Ayrshires, Devons, Holderness and Holsteins. The loss of fat is made eight per cent. of the milk-fat, when the milk contains, on an average, 1.40 pounds of fat for one pound of casein and albumen, as in the case of the Guernseys. The loss of fat is made ten per cent. when the milk contains, on an average, 1.50 pounds or more of fat for one pound of casein and albumen, as in the case of the Jerseys.

2. The loss of casein and albumen is made uniformly twenty-three per cent. of the casein and albumen contained in the milk.

3. The other constituents of the cheese, as water, salt and other ash constituents, sugar, lactic acid, etc., are calculated as being four and one-half pounds for the cheese made from 100 pounds of milk.

Below we state, in detail, the data upon which the calculations are based :

AVERAGE PER CENT. OF FAT IN MILK.

(1.) Jerseys	5.68
(2.) Guernseys.....	5.02
(3.) Devons	4.46
(4.) Holsteins	3.74
(5.) Holderness.....	3.60
(6.) Ayrshires	3.50

AVERAGE PER CENT. OF CASEIN AND ALBUMEN IN MILK.

(1.) Devons	3.81
(2.) Jerseys	3.76
(3.) Guernsey s.....	3.60
(4.) Ayrshires	3.34
(5.) Holsteins	3.23
(6.) Holderness.....	3.19

POUNDS OF FAT FOR ONE POUND OF CASEIN AND ALBUMEN IN MILK.

(1.) Jerseys	1.50
(2.) Guernseys	1.40
(3.) Devons	1.17
(4.) Holsteins	1.16
(5.) Holderness.....	1.13
(6.) Ayrshires .	1.05

An examination of the foregoing tables shows the following points of interest :

1. The fat in the milk of the different breeds varies from 5.68 to 3.50 per cent., a variation, between highest and lowest, of 2.18 per cent.

2. The casein and albumen in the milk of the different breeds varied from 3.81 to 3.19 per cent., a variation, between highest and lowest, of 0.62 per cent.

3. The fat varies over three and one-half times as much as the casein and albumen of the milk.

4. If we compare the breeds with reference to per cent. of fat and per cent. of casein and albumen in the milk, we see that the

Devons stand *third* in fat and *first* in regard to casein and albumen ; and the Ayrshires, standing *sixth* or lowest in milk-fat, stand *fourth* in regard to casein and albumen. The other breeds preserve the same relative order in regard to casein and albumen as in regard to fat.

5. If we compare the breeds with reference to the milk-fat and the *ratio* of casein and albumen to milk-fat, as in the first and third tables above, we see that they stand in the same relative order ; that is, the Jerseys stand highest in regard to milk-fat and their milk also contains the largest amount of fat for each pound of casein and albumen. The other breeds follow in the same relative order in the two tables.

6. The difference in milk-fat, available or recoverable for cheese-making, in 100 pounds of milk, between the highest and lowest is 1.86 pounds, while the difference in regard to casein and albumen, available for cheese-making, between highest and lowest, is 0.48 pounds ; that is, the fat that we can fairly expect to work from the milk into the cheese, from 100 pounds of milk, varies nearly four times as much as the casein and albumen, if we consider the variations between the highest and lowest numbers of these constituents, that can be regarded as available for cheese-making.

POUNDS OF CHEESE MADE FROM ONE HUNDRED POUNDS OF MILK.

(1.) Jerseys	12.52
(2.) Guernseys	11.90
(3.) Devons	11.58
(4.) Holsteins	10.55
(5.) Ayrshires	10.33
(6.) Holderness.....	10.30

POUNDS OF MILK REQUIRED TO MAKE ONE POUND OF CHEESE.

(1.) Jerseys	8.00
(2.) Guernseys	8.40
(3.) Devons	8.64
(4.) Holsteins	9.48
(5.) Ayrshires	9.68
(6.) Holderness.....	9.72

In examining the two tables preceding, we notice :

1. That the yield of cheese by the different breeds corresponds to the amount of fat in the milk more closely than to the amount of casein and albumen ; that is, the fat in the milk exercises a greater influence on the yield of cheese than do the other constituents of the milk.

2. We notice one exception to the foregoing statement in the case of the Ayrshires and the Holderness. While the milk of the Holderness contains more fat, the yield of cheese from the Ayrshire milk is a trifle greater. This is readily accounted for, when we notice that the amount of casein and albumen in the milk of the Ayrshires is greater than in that of the Holderness.

AVERAGE MONTHLY YIELD OF POUNDS OF CHEESE FOR THE FIRST PERIOD OF LACTATION.

(1.) Holsteins	78.46
(2.) Ayrshires	59.77
(3.) Guernseys	59.60
(4.) Jerseys	56.14
(5.) Holderness	46.28
(6.) Devons	41.32

COST (IN CENTS) OF FOOD CONSUMED FOR EACH POUND OF CHEESE PRODUCED.

(1.) Guernseys	6.61
(2.) Holsteins	6.95
(3.) Ayrshires	7.24
(4.) Holderness	7.48
(5.) Jerseys	7.95
(6.) Devons	8.20

In connection with the preceding table, we notice :

1. That the Guernseys produce a pound of cheese at least food-cost, and this was also true of the butter production of the Guernseys.

2. The Holsteins and Ayrshires, which stood highest in the food-cost of butter production, stand second and third in regard to the food-cost of cheese production ; while the reverse is true of the Jerseys and Devons.

The foregoing tables do not enable us to say which line of production, butter or cheese, would yield the greater profit in case of the different breeds. In order to determine this point more clearly, we present below the total value of the butter produced by each breed during the first period of lactation and also the value of the calculated cheese production. The butter is estimated at twenty-five cents a pound, and the cheese at ten cents a pound, no attempt being made to assign prices varying with the quality of the production of the different breeds.

VALUE OF BUTTER PRODUCTION COMPARED WITH VALUE OF CHEESE PRODUCTION FOR ONE PERIOD OF LACTATION.

	Value of butter production for one period of lactation.	Value of cheese production for one period of lactation.
Ayrshires	\$47 00 (4)	\$59 77 (2)
Devons	38 00 (6)	41 32 (6)
Guernseys	67 00 (1)	59 60 (3)
Holderness	39 25 (5)	46 28 (5)
Holsteins	60 25 (3)	78 46 (1)
Jerseys	66 75 (2)	56 14 (4)

PROFITS FROM BUTTER AND CHEESE FOR EACH BREED.

The values below represent the differences between the food cost of the breeds for one period of lactation and the value of the butter and cheese products, as given in the table above.

	Profits from butter for one period of lactation.	Profits from cheese for one period of lactation.
Ayrshires	\$3 70 (6)	\$16 47 (3)
Devons	4 30 (5)	7 62 (6)
Guernseys	27 60 (1)	20 20 (2)
Holderness	4 65 (4)	11 68 (4)
Holsteins	5 75 (3)	20 96 (1)
Jerseys	22 15 (2)	11 54 (5)

From the foregoing table it appears that the Guernseys and Jerseys are by far most profitable for butter production, as compared with the other breeds; while for cheese production the Holsteins stand first, with the Guernseys closely following.

GENERAL SUMMARY OF RESULTS RELATING TO THE CHEESE PRODUCTION OF DIFFERENT BREEDS.

The more important results that have been presented in the foregoing discussion are summarized in the table below :

TABULATED SUMMARY OF RESULTS FOR THE FIRST PERIOD OF LACTATION.

	Ayr-shires.	Devons.	Guern-seys.	Holder-ness.	Hol-steins.	Jerseys.
Pounds of fat in 100 pounds of milk	3.50	4.46	5.02	3.60	3.74	5.68
Pounds of casein and albumen in 100 pounds of milk	3.34	3.81	3.60	3.19	3.23	3.76
Pounds of fat for one pound of casein and albumen in milk ..	1.05	1.17	1.40	1.13	1.16	1.50
Pounds of cheese made from 100 pounds of milk	10.33	11.58	11.90	10.30	10.55	12.52
Pounds of milk required to make one pound of cheese ...	9.68	8.64	8.40	9.72	9.48	8.00
Pounds of cheese produced per month	59.77	41.32	59.60	46.28	78.46	56.14
Food cost for each pound of cheese	0.0724	0.082	0.0661	0.0748	0.0695	0.0795
Value of butter production	\$47 00	\$38 00	\$67 00	\$39 25	\$60 25	\$66 75
Value of cheese production	59 77	41 32	59 60	46 28	78 46	56 14
Profits from butter	3 70	4 30	27 60	4 65	5 75	22 15
Profits from cheese	16 47	7 62	20 20	11 68	20 96	11 54

XVI. THE INFLUENCE OF ADVANCING LACTATION UPON THE PRODUCTION OF BUTTER.

It is proposed to discuss, under the above heading, the influence of advancing lactation upon the various factors that are connected with butter-making, using, as the basis of discussion, the data that have been accumulated in connection with the comparative examination of breeds of dairy cattle.

INFLUENCE OF ADVANCING LACTATION UPON THE AMOUNT OF FAT LOST AND RECOVERED IN BUTTER-MAKING.

In the tables presented below, we have data giving the averages of the different herds of cows for each month during the first period of lactation. The data have already been explained, so far as explanation is needed, under the "comparison of dairy breeds of cattle with reference to butter production."

1. *Pounds of fat in 100 pounds of milk.*

TABLE SHOWING POUNDS OF FAT IN 100 POUNDS OF MILK.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	3.53	3.54	6.14	5.04	.....	6.10
2	3.48	3.73	5.13	3.61	3.59	5.27
3	3.40	3.96	4.61	3.37	3.86	5.18
4	3.40	4.28	4.63	3.44	3.64	5.75
5	3.37	4.43	5.00	3.33	3.66	5.68
6	3.26	5.06	4.93	3.33	3.92	5.73
7	3.48	4.93	4.83	3.35	3.55	5.72
8	3.61	4.44	4.86	3.49	3.73	5.80
9	3.68	5.57	4.92	3.59	3.90	5.76
10	3.83	4.66	5.14	3.44	3.95	5.81

In examining the foregoing table, we notice the following points of interest:

1. In most cases, the per cent. of fat in the milk is greatest during the first month of lactation. The Devons furnish an exception to this general statement, since the per cent. of fat was least in the first month of lactation.

2. In the second month of lactation, the per cent. of fat drops considerably in most cases, the diminution being greatest in the richer milks. In the milks containing the smaller proportions of fat, as the Ayrshires, Holderness and Holsteins, the diminution of per cent. of fat continued until the sixth or seventh month of lactation, while with the Guernseys and Jerseys, the diminution continued through the third month. In the case of the Devons, the per cent. of fat increased gradually from the first month throughout the entire period of lactation, with some fluctuations.

3. The general tendency in regard to the influence of advancing lactation upon the per cent. of fat contained in the milk, is well shown by the following average of all the breeds:

Month of lactation.	Per cent. of fat in milk.
1	4.87
2	4.14
3	4.06
4	4.19
5	4.25
6	4.37
7	4.31
8	4.32
9	4.57
10	4.47

2. *Fat in skim-milk.*

TABLE SHOWING POUNDS OF FAT IN SKIM-MILK FROM 100 POUNDS OF MILK.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	0.35	0.20	0.16	0.63	.....	0.44
2	0.29	0.38	0.18	0.42	0.58	0.40
3	0.42	0.53	0.24	0.38	0.78	0.25
4	0.38	0.55	0.19	0.42	0.57	0.25
5	0.39	0.77	0.20	0.43	1.06	0.41
6	0.52	0.83	0.37	0.36	0.52	0.52
7	0.78	1.21	0.46	0.33	0.53	0.31
8	0.91	1.04	0.37	0.44	0.60	0.29
9	0.67	0.11*	0.34	0.56	0.41	0.39
10	0.82	0.11*	0.69	0.41	1.22	0.41

*Creamed by centrifugal machine.

TABLE SHOWING PER CENT. OF FAT IN MILK LOST IN SKIM-MILK.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	9.1	5.7	2.7	12.2	.....	7.3
2	7.9	10.0	3.5	11.8	16.2	7.6
3	12.1	13.4	5.3	11.5	20.1	4.9
4	11.3	13.3	4.1	12.8	15.6	4.2
5	11.9	17.7	3.9	11.3	29.0	7.1
6	17.3	17.4	7.4	11.1	13.3	8.8
7	22.0	24.7	9.6	9.8	14.5	5.4
8	23.0	23.4	7.4	12.6	16.0	4.8
9	17.3	2.0	6.9	15.5	10.8	6.2
10	10.2	2.4	13.2	12.1	31.0	7.0

In regard to the influence of advancing lactation on loss of fat in skim-milk, when the gravity method of creaming as described was used, we notice the following:

1. The *general* tendency exhibited is a greater loss of fat in skim-milk as lactation advances. This is especially noticeable in case of the Ayrshires and Devons, less so in case of the others. It should be stated that the results given for the Devons during the last two months of lactation were obtained by the centrifugal methods of creaming and should not be considered in this connection. In the case of the Jerseys and Holderness, we can not perceive that advancing lactation had any marked influence whatever upon loss of fat in creaming, while the increase of loss in the case of the Guernseys was slight. The milks richest in fat appear, on the whole, to be least influenced.

2. It, therefore, appears from the results in hand that it is not always true that advancing lactation diminishes the creaming efficiency of milk. The undoubted tendency in many or, perhaps, most cases is toward decreased creaming efficiency with advance of lactation, but breeds and individuals vary considerably in this respect as in others. In view of these results, any sweeping assertion to the effect that advancing lactation always and of necessity diminishes the creaming efficiency of milk-fat must be accepted with some allowances.

3. *Fat in cream.*

The tables below give, in another form, results which point in the same direction as those given above in regard to the influence of advancing lactation upon the creaming efficiency of milk.

TABLE SHOWING POUNDS OF FAT IN CREAM FROM 100 POUNDS OF MILK.]

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	3.18	3.34	5.98	4.41	.....	5.66
2	3.19	3.35	4.95	3.19	3.01	4.87
3	2.98	3.43	4.37	2.99	3.08	4.93
4	3.02	3.73	4.42	3.02	3.07	5.50
5	2.98	3.66	4.80	2.90	2.60	5.27
6	2.74	4.23	4.56	2.97	3.40	5.21
7	2.70	3.72	4.37	3.02	3.02	5.41
8	2.70	3.40	4.49	3.05	3.13	5.51
9	3.01	5.46	4.58	3.03	3.49	5.37
10	3.01	4.55	4.45	3.03	2.73	5.40

TABLE SHOWING PER CENT. OF FAT IN MILK RECOVERED IN CREAM.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	90.9	94.3	97.3	87.8	.....	92.7
2	92.1	90.0	96.5	88.2	83.8	92.4
3	87.9	86.6	94.7	88.5	79.9	95.1
4	88.7	86.7	95.9	87.2	84.4	95.8
5	88.1	82.3	96.1	88.7	71.0	92.9
6	82.7	82.6	92.6	88.9	86.7	91.2
7	78.0	75.3	90.4	90.2	85.5	94.6
8	77.0	76.6	92.6	87.4	84.0	95.2
9	82.7	98.0	93.1	84.5	89.2	93.8
10	89.8	97.6	86.8	87.9	69.0	93.0

4. *Fat in buttermilk.*

An examination of the tables below indicates that the loss of fat in buttermilk is variable and the variations, as a rule, appear to be independent of the influence of the period of lactation.

TABLE SHOWING POUNDS OF FAT IN BUTTERMILK FROM 100
POUNDS OF MILK.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	0.05	0.01	0.17	0.12	.....	0.15
2	0.07	0.02	0.05	0.05	0.40	0.08
3	0.11	0.02	0.03	0.07	0.17	0.06
4	0.10	0.01	0.02	0.04	0.21	0.04
5	0.09	0.03	0.02	0.02	0.11	0.04
6	0.06	0.03	0.02	0.05	0.07	0.11
7	0.12	0.04	0.04	0.04	0.03	0.04
8	0.12	0.02	0.03	0.02	0.03	0.04
9	0.06	0.09	0.05	0.03	0.01	0.02
10	0.13	0.04	0.10	0.08	0.05	0.03

TABLE SHOWING PER CENT. OF FAT IN MILK LOST IN BUTTERMILK.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	1.8	0.4	1.3	2.2	.....	2.5
2	1.9	0.5	0.8	1.3	11.2	1.8
3	3.2	0.5	0.6	2.2	3.2	1.5
4	2.7	0.3	0.5	1.0	7.0	0.7
5	2.3	0.7	0.4	0.7	3.1	0.7
6	1.8	0.5	0.4	1.5	1.9	1.9
7	3.2	0.8	0.3	1.1	0.8	0.5
8	3.2	0.5	0.6	0.4	0.9	0.6
9	1.7	1.6	1.2	0.8	0.3	0.3
10	1.4	0.9	2.0	2.3	3.0	0.5

5. *Fat in butter.*

Since the amount of fat lost in the buttermilk is comparatively slight, it is evident that what holds true in regard to the fat recovered in the cream is generally true regarding the fat recovered in the butter; and the data in the following tables follow those already made, viz., that advancing lactation tends, in some cases, to diminish the amount of fat recovered while, in other cases, the influence is slight or apparently nothing.

TABLE SHOWING POUNDS OF FAT IN BUTTER FROM 100 POUNDS OF MILK.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	3.07	3.32	5.75	4.15	.....	5.23
2	3.06	3.28	4.76	2.97	2.33	4.56
3	2.76	3.32	4.24	2.77	2.77	4.56
4	2.80	3.60	4.37	2.94	2.43	5.11
5	2.79	3.30	4.66	2.82	2.43	5.13
6	2.65	3.92	4.42	2.90	3.27	4.90
7	2.49	3.25	4.23	2.98	2.91	5.19
8	2.46	3.38	4.43	2.94	3.07	5.39
9	2.77	4.88	4.52	2.97	3.35	5.17
10	2.80	4.46	4.35	2.64	2.60	5.31

TABLE SHOWING PER CENT. OF FAT IN MILK RECOVERED IN BUTTER.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	87.6	93.7	93.0	82.4	.....	85.7
2	88.7	88.2	93.0	82.3	64.8	86.7
3	82.1	83.9	92.3	82.1	71.7	88.2
4	82.8	84.0	94.4	85.4	66.9	88.6
5	82.6	74.0	93.0	84.7	66.2	90.5
6	79.9	77.0	89.6	87.1	83.5	86.0
7	72.5	66.0	87.6	88.7	82.5	91.0
8	71.0	76.0	91.3	84.2	82.4	93.2
9	77.0	87.6	91.5	82.9	85.6	88.8
10	87.4	95.7	84.7	81.8	65.7	91.4

6. *Yield of butter.*

TABLE SHOWING POUNDS OF BUTTER (CONTAINING 85 PER CENT. BUTTER FAT) FROM 100 POUNDS OF MILK.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	3.60	3.91	6.76	4.88	.....	6.15
2	3.60	3.86	5.59	3.51	2.74	5.36
3	3.25	3.91	5.04	3.26	3.26	5.36
4	3.29	4.24	5.14	3.45	2.86	6.01
5	3.28	3.88	5.48	3.31	2.86	6.03
6	3.12	4.61	5.20	3.42	3.85	5.77
7	2.96	3.83	4.98	3.49	3.42	6.11
8	2.90	3.98	5.20	3.45	3.62	6.35
9	3.29	5.74	5.32	3.50	3.94	6.08
10	3.31	5.25	5.12	3.10	3.06	6.24

7. *Butter-making efficiency of milk-fat.*

TABLE SHOWING POUNDS OF BUTTER MADE FROM ONE POUND OF MILK-FAT.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	1.00	1.10	1.05	0.96	.....	1.00
2	1.01	1.03	1.09	0.95	0.76	1.00
3	0.93	0.99	1.09	0.96	0.84	1.03
4	0.95	0.97	1.11	1.00	0.77	1.03
5	0.95	0.88	1.10	0.99	0.74	1.06
6	0.93	0.87	1.05	1.02	0.97	1.00
7	0.82	0.78	1.02	1.04	0.96	1.06
8	0.79	0.90	1.07	0.99	0.97	1.09
9	0.86	1.03	1.06	0.97	1.00	1.05
10	0.91	1.17	1.00	0.88	0.77	1.07

6. *Yield of butter.*

Since the amount of standard butter that can be made from a pound of milk-fat depends upon the loss of fat in the process of making butter, the results must point in the same direction as those previously given. The amount of butter that can be made from a pound of milk-fat diminishes noticeably with advancing lactation in some cases, as with the Ayrshires and Devons, and, in a scarcely noticeable degree, with the Guernseys and Holderness. With the Jerseys and Holsteins there appeared to be an increase in the efficiency of the milk-fat for butter production. .

INFLUENCE OF ADVANCING LACTATION UPON THE RELATIONS OF MILK
TO CREAM AND BUTTER.

1. *Pounds of milk required to make one pound of butter.*

TABLE SHOWING POUNDS OF MILK REQUIRED TO MAKE ONE POUND
OF BUTTER.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	27.8	25.6	15.0	20.5	.....	16.3
2	27.8	25.8	17.9	28.5	36.5	18.7
3	30.8	25.6	19.8	30.7	30.7	18.7
4	30.4	23.6	19.5	29.0	35.0	16.6
5	30.5	25.8	18.3	30.2	35.0	16.6
6	32.1	21.7	19.2	29.2	26.0	17.3
7	33.8	26.1	20.0	28.7	29.2	16.4
8	34.5	25.1	19.2	29.0	27.6	15.8
9	30.4	17.4	18.8	28.6	25.4	16.4
10	30.2	19.1	19.5	32.8	32.7	16.0

2. Pounds of milk required to make one pound of cream.

TABLE SHOWING POUNDS OF MILK REQUIRED TO MAKE ONE POUND OF CREAM.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	5.64	5.23	3.64	5.29	.....	4.19
2	6.30	5.54	3.66	6.49	7.36	4.17
3	6.52	5.66	3.76	6.35	6.47	4.22
4	6.56	4.85	3.34	5.38	6.49	3.93
5	6.85	5.48	3.88	5.26	7.87	3.94
6	5.92	4.82	4.13	4.63	5.21	3.59
7	6.54	4.48	3.91	5.07	6.41	3.63
8	6.84	5.13	3.63	6.06	6.21	3.77
9	6.08	4.23	3.54	5.84	5.85	3.93
10	5.43	4.72	3.66	4.75	7.00	3.51

3. Pounds of cream required to make one pound of butter.

TABLE SHOWING POUNDS OF CREAM REQUIRED TO MAKE ONE POUND OF BUTTER.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	5.00	4.92	4.24	3.90	.....	3.89
2	4.51	4.70	4.93	4.48	4.97	4.53
3	4.87	4.54	5.29	4.86	4.76	4.44
4	4.73	4.94	5.87	5.44	5.51	4.31
5	4.56	4.71	4.70	5.76	4.50	4.21
6	5.63	4.70	4.67	6.36	5.00	4.87
7	5.36	5.83	5.17	5.66	4.56	4.53
8	5.28	4.90	5.30	4.78	4.45	4.19
9	5.28	4.12	5.39	4.91	4.37	4.20
10	5.30	4.04	5.35	6.89	4.69	4.60

4. *Per cent. of fat in cream.*

TABLE SHOWING PER CENT. OF FAT IN CREAM.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	18.00	17.42	21.42	23.22	.....	24.17
2	20.55	18.56	18.14	20.79	22.14	20.06
3	19.20	19.40	16.61	18.99	20.02	21.20
4	19.68	17.90	14.85	16.29	19.99	21.52
5	20.14	19.92	18.72	15.21	20.40	20.84
6	16.12	19.70	18.74	13.79	17.74	18.50
7	16.95	16.68	17.03	15.30	19.48	19.70
8	17.31	17.44	16.18	18.52	19.49	20.83
9	18.19	23.14	16.16	17.65	20.47	21.04
10	17.88	19.53	16.10	14.58	19.13	18.78

No general statement regarding the influence of advancing lactation upon the amount of milk required to make a pound of butter can be made that will hold true of all the breeds. When the amount of fat in the milk increases, less milk is required to make a pound of butter, provided the increased amount of fat is not lost in the skim-milk and buttermilk. In the case of the Ayrshires, the amount of milk required to make a pound of butter gradually increases with advancing lactation; with the other breeds, the tendency appears to be a slight fluctuation about a certain point or else a tendency to a slightly diminished amount of milk for making butter.

In regard to the influence of advancing lactation upon the amount of milk required to make a pound of cream, the amount of cream required to make a pound of butter, and upon the per cent. of fat in the cream, it is impossible, from the data in hand to make any general statement. Such variations as there are appear more or less irregular and are not very marked.

THE INFLUENCE OF ADVANCING LACTATION UPON THE DAILY YIELD
OF MILK AND BUTTER.

1. *Pounds of milk given per day.*

TABLE SHOWING POUNDS OF MILK GIVEN PER DAY.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	15.3	13.1	13.4	11.8	.....	16.0
2	20.5	14.0	15.9	17.5	28.5	18.3
3	20.1	13.9	17.6	18.6	29.8	17.5
4	20.3	13.1	17.3	15.8	23.9	16.1
5	19.7	11.9	17.4	15.6	25.0	15.6
6	18.9	10.9	17.4	14.9	23.4	14.9
7	19.6	10.8	17.6	13.7	25.5	13.6
8	17.9	11.2	17.3	13.0	23.4	13.0
9	17.3	10.4	16.6	13.2	20.6	13.3
10	16.0	10.6	15.2	13.6	18.2	12.9

2. *Pounds of butter produced per day.*

TABLE SHOWING POUNDS OF BUTTER PER DAY.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	0.55	0.51	0.89	0.58	.....	0.98
2	0.75	0.54	0.89	0.61	0.94	0.98
3	0.65	0.54	0.89	0.61	0.97	0.94
4	0.67	0.56	0.89	0.55	0.63	0.97
5	0.65	0.46	0.95	0.52	0.71	0.94
6	0.59	0.50	0.91	0.51	0.90	0.86
7	0.58	0.41	0.88	0.48	0.87	0.83
8	0.52	0.45	0.90	0.45	0.85	0.82
9	0.57	0.60	0.88	0.47	0.81	0.81
10	0.53	0.55	0.78	0.42	0.56	0.80

The general rule is an increased milk yield in the second month over the first month of lactation. In the case of the Ayrshires, Devons and Jerseys, the yield gradually, and with considerable regularity, decreased with each month of lactation. With the

Guernseys, Holderness and Holsteins, the highest yield of milk was in the third month of lactation, after which there was gradual diminution, except in the case of the Guernseys, and their average daily milk yield continued very nearly uniform through the first eight months of lactation before dropping noticeably.

In regard to daily yield of butter, it was highest in the second month of lactation with the Ayrshires, Holderness and Jerseys, after which there was a gradual diminution. The daily butter yield of the Devons increased during the first four months and then diminished. The butter yield of the Guernseys was uniformly the same during the first four months and reached its highest in the fifth month of lactation and then remained about the same as during the first four months up to the tenth month of lactation.

INFLUENCE OF ADVANCING LACTATION UPON THE MONTHLY YIELD OF DAIRY PRODUCTS.

1. *Monthly yield of milk.*

TABLE SHOWING POUNDS OF MILK GIVEN PER MONTH.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	260.2	205.9	250.4	150.8	.....	341.1
2	636.3	418.3	491.7	541.2	884.0	527.3
3	596.4	428.4	520.0	558.0	895.0	487.8
4	642.7	398.8	509.3	489.2	780.6	452.5
5	611.2	362.8	529.6	483.9	780.5	484.3
6	619.1	335.2	530.0	416.6	725.1	443.6
7	609.2	323.5	537.0	425.0	790.1	408.7
8	545.7	346.0	527.0	390.7	655.8	395.7
9	539.5	311.9	512.2	407.8	638.1	407.9
10	512.4	328.6	463.7	407.6	544.7	395.7

2. *Monthly yield of skim-milk.*

TABLE SHOWING POUNDS OF SKIM-MILK PER MONTH.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	214.1	166.5	181.7	122.3	.....	259.7
2	525.3	342.8	357.6	457.8	764.0	400.9
3	504.9	352.7	381.7	470.6	756.7	372.2
4	544.7	316.6	356.8	398.3	660.3	337.4
5	522.0	296.6	393.1	392.1	655.1	361.3
6	514.5	265.2	401.7	326.6	586.0	320.0
7	516.1	251.3	399.7	341.2	666.9	296.1
8	466.0	278.6	381.8	326.2	550.2	290.7
9	450.8	238.2	367.5	337.8	529.9	304.1
10	418.1	259.0	337.1	321.6	467.1	283.0

3. *Monthly yield of cream.*

TABLE SHOWING POUNDS OF CREAM PER MONTH.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	46.1	39.4	68.7	28.5	.....	81.4
2	110.0	75.5	134.1	83.4	120.0	126.4
3	91.5	75.7	138.3	88.0	138.3	115.6
4	98.0	82.2	152.5	90.9	120.3	115.1
5	89.2	66.2	136.5	91.8	95.4	123.0
6	104.6	70.0	128.3	90.0	139.1	123.6
7	93.1	72.2	137.3	83.8	123.2	112.6
8	79.7	67.4	145.2	64.5	105.6	105.0
9	88.7	73.7	144.7	70.0	109.1	103.8
10	94.3	69.6	126.6	86.0	77.6	112.7

4. *Monthly yield of buttermilk.*

TABLE SHOWING POUNDS OF BUTTERMILK PER MONTH.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	36.9	31.4	52.5	21.2	.....	60.5
2	87.7	59.5	106.7	64.8	95.8	98.5
3	72.7	59.0	112.1	69.9	109.3	89.6
4	77.3	65.6	126.4	74.1	98.5	88.4
5	69.7	52.1	107.5	75.8	74.2	93.8
6	86.0	55.2	100.5	75.8	111.5	98.2
7	75.7	59.8	110.8	69.0	96.2	87.8
8	64.3	53.7	117.8	51.0	81.9	80.0
9	71.6	55.8	117.9	55.8	84.1	79.1
10	76.4	52.4	102.9	73.6	61.0	91.9

5. *Monthly yield of milk-fat.*

TABLE SHOWING POUNDS OF FAT IN MILK PER MONTH.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	9.20	7.29	15.37	7.60'	.....	20.81
2	22.14	15.60	25.22	19.54	31.73	27.79
3	20.27	16.96	23.97	18.82	34.55	25.27
4	21.85	17.07	23.58	16.82	28.41	26.02
5	20.60	16.07	26.48	16.11	28.57	27.51
6	20.08	16.96	26.13	13.87	28.42	25.42
7	21.20	15.95	25.93	14.24	28.05	23.38
8	19.70	15.36	25.61	13.64	24.46	22.95
9	19.85	17.37	25.20	14.64	24.89	23.50
10	19.62	15.31	23.83	14.03	21.52	22.99

6. *Monthly yield of fat in butter.*

TABLE SHOWING POUNDS OF FAT IN BUTTER PER MONTH.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	7.8	6.8	13.8	6.2	.....	17.8
2	19.0	13.6	23.3	15.8	20.6	23.7
3	16.0	14.2	22.3	15.4	24.7	22.1
4	17.6	14.1	22.2	14.3	18.5	22.7
5	16.6	12.0	24.7	13.6	18.0	24.8
6	15.8	12.6	23.4	12.1	23.5	21.6
7	14.8	10.5	22.5	12.6	23.0	21.1
8	13.1	11.7	23.3	11.5	20.1	21.2
9	14.5	15.2	22.8	12.1	21.2	21.0
10	15.2	14.6	20.1	10.5	14.1	20.8

7. *Monthly yield of butter.*

TABLE SHOWING POUNDS OF BUTTER PER MONTH.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	9.2	8.0	16.2	7.3	.....	20.9
2	22.3	16.0	27.4	18.6	24.2	27.9
3	18.8	16.7	26.2	18.1	29.0	26.0
4	20.7	16.6	26.1	16.8	21.8	26.7
5	19.5	14.1	29.0	16.0	21.2	29.2
6	18.6	14.8	27.5	14.2	27.6	25.4
7	17.4	12.4	26.5	14.8	27.0	24.8
8	15.4	13.8	27.4	13.5	23.7	25.0
9	17.1	17.9	26.8	14.2	25.0	24.7
10	17.9	17.2	23.7	12.4	16.6	24.5

With most of the breeds, the largest milk yield was given in the second or third month, after which there was a gradual but not uniform diminution; with the Ayrshires, the highest yield was in the fourth month; with the Guernseys, in the seventh month.

In regard to yield of fat in milk, most of the breeds gave the largest yield in the second or third months, with a gradual but not uniform diminution afterwards, and the same was practically true in regard to the monthly yield of fat in butter and of butter.

Influence of advancing lactation upon temperature of churning.

TABLE SHOWING TEMPERATURE (IN DEGREES FAHRENHEIT) OF CHURNING.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	62	64	60	60	.....	61
2	61	65	61	60	60	61
3	62	64	62	60	61	62
4	61	67	63	62	62	60
5	64	66	62	65	60	61
6	65	67	62	66	63	62
7	64	68	64	66	63	64
8	65	68	65	63	64	64
9	65	69	66	66	65	63
10	66	67	69	67	72	65

The general tendency is to an increase in temperature of churning as the period of lactation advances.

Influence of advancing lactation upon time of churning.

TABLE SHOWING LENGTH OF TIME (IN MINUTES) OF CHURNING.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	28	35	17	66	.....	33
2	30	31	19	53	40	46
3	34	36	32	49	67	38
4	35	70	36	76	91	53
5	35	39	34	85	75	63
6	41	68	44	86	137	71
7	60	53	32	102	100	92
8	41	91	42	72	87	57
9	62	55	26	56	134	55
10	60	35	28	83	.....	53

The general tendency is to an increase in the length of time required for churning as the period of lactation advances.

Influence of advancing lactation upon fat globules of milk.

TABLE SHOWING RELATIVE NUMBER OF FAT GLOBULES.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	62	68	61	.....	.....	49
2	66	68	46	67	53	53
3	70	99	52	68	67	45
4	85	77	76	87	132	86
5	93	152	64	79	95	56
6	94	144	70	104	66	76
7	117	186	103	111	94	62
8	140	241	89	94	123	80
9	168	225	120	116	132	83
10	162	211	104	106	168	103

TABLE SHOWING RELATIVE SIZE OF FAT GLOBULES.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	687	546	928	.....	.....	1104
2	580	585	1063	661	640	1098
3	624	450	954	607	576	1228
4	426	547	659	501	256	1097
5	384	319	837	397	396	1149
6	399	355	737	324	595	846
7	322	270	584	329	340	1017
8	298	200	568	379	310	733
9	241	250	408	315	384	715
10	248	228	426	336	248	571

From the foregoing data, it appears that advancing lactation is generally accompanied by an increase in the relative number and a diminution in the relative size of the fat globules.

XVII. THE INFLUENCE OF ADVANCING LACTATION UPON THE PRODUCTION OF CHEESE.

CASEIN AND ALBUMEN IN MILK.

An examination of the table below indicates a general increase of casein and albumen in the milk after the first month, as the period of lactation advances.

TABLE SHOWING POUNDS OF CASEIN AND ALBUMEN IN 100 POUNDS OF MILK.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	3.37	4.00	4.00	3.40	.....	3.51
2	2.98	3.27	2.88	2.88	2.88	3.46
3	2.99	3.65	3.02	3.20	2.83	3.72
4	3.35	3.63	3.56	2.97	3.05	3.65
5	3.44	3.70	3.51	2.70	3.17	3.72
6	3.42	4.29	3.56	3.13	3.58	3.72
7	3.19	3.91	3.68	3.38	2.94	4.03
8	3.30	3.90	3.75	3.27	2.93	3.96
9	3.62	4.04	3.83	3.61	3.67	4.06
10	3.70	3.73	4.24	3.37	4.01	3.92

Ratio of fat to casein and albumen in milk.

TABLE SHOWING NUMBER OF POUNDS OF FAT FOR ONE POUND OF
CASEIN AND ALBUMEN IN MILK:

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	1.05	0.89	1.53	1.48	.....	1.74
2	1.17	1.14	1.78	1.25	1.25	1.52
3	1.13	1.09	1.53	1.05	1.36	1.40
4	1.01	1.18	1.30	1.16	1.19	1.57
5	0.98	1.20	1.42	1.23	1.15	1.52
6	0.95	1.18	1.88	1.06	1.09	1.54
7	1.09	1.26	1.31	1.00	1.21	1.42
8	1.09	1.14	1.30	1.07	1.27	1.46
9	1.02	1.37	1.28	1.00	1.07	1.42
10	1.04	1.25	1.21	1.02	0.99	1.48

In the table above we show the number of pounds of fat for one pound of casein and albumen in milk during the period of lactation. In the case of the Ayrshires, the ratio increases and decreases without any marked uniformity during the period of lactation. With the Devons, the ratio increases as lactation advances, while in the other breeds the ratio decreases as lactation advances. The loss of fat in the process of manufacture should be less in the latter case.

Pounds of cheese made from milk.

TABLE SHOWING POUNDS OF CHEESE MADE FROM 100 POUNDS OF MILK.

MONTH OF LACTATION.	Ayrshires	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	10.38	10.87	13.23	11.81	.....	12.69
2	10.03	10.49	11.44	10.07	10.06	11.91
3	9.96	10.99	11.07	10.09	10.27	12.03
4	10.24	11.28	11.50	9.99	10.23	12.49
5	10.28	11.47	11.80	9.68	10.34	12.47
6	10.18	12.51	11.78	10.00	11.48	12.52
7	10.19	12.10	11.78	10.22	10.07	12.75
8	10.40	11.63	11.86	10.26	10.23	12.77
9	10.71	12.79	12.09	10.62	11.02	12.81
10	10.91	11.70	12.49	10.29	11.26	12.75

TABLE SHOWING POUNDS OF MILK REQUIRED TO MAKE ONE POUND OF CHEESE.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	9.63	9.20	7.56	8.46	.....	7.90
2	9.97	9.53	8.74	9.93	9.94	8.40
3	10.04	9.01	9.03	9.91	9.73	8.31
4	9.77	8.86	8.70	10.01	9.77	8.00
5	9.73	8.72	8.47	10.33	9.67	8.02
6	9.82	8.00	8.49	10.00	8.71	8.00
7	9.81	8.26	8.48	9.78	9.93	7.84
8	9.61	8.60	8.43	9.74	9.77	7.82
9	9.34	7.81	8.27	9.41	9.07	7.80
10	9.14	8.55	8.00	9.71	8.88	7.84

It appears from the above data that less milk is required to make cheese as the lactation period advances. This would naturally follow from the fact that the fat and casein increase as lactation advances, and, moreover, in most cases, there should be less loss of fat as lactation advances, since, in general, there is more casein in proportion to fat as lactation advances.

MONTHLY YIELD OF CHEESE.

TABLE SHOWING AVERAGE MONTHLY YIELD OF POUNDS OF CHEESE.

MONTH OF LACTATION.	Ayrshires.	Devons.	Guernseys.	Holderness.	Holsteins.	Jerseys.
1	49.13	34.44	50.95	44.56	.....	61.68
2	63.82	43.90	56.26	54.50	88.93	62.77
3	59.40	47.55	57.59	56.37	92.00	58.70
4	65.78	45.01	58.54	48.87	79.84	56.56
5	62.82	41.61	62.53	46.84	80.71	60.39
6	63.04	41.90	62.42	41.66	83.25	55.45
7	62.10	39.17	63.32	43.50	79.57	52.13
8	56.78	40.23	62.52	40.11	67.12	50.60
9	57.76	40.00	61.93	43.34	70.35	52.30
10	56.06	38.43	57.96	42.00	61.34	50.47

The monthly yield of cheese increased, in most cases, during the first two or three months of lactation and then gradually diminished. In the case of the Guernseys, the yield increased during the first seven months and then slowly diminished.

XVIII. HOW TO ASCERTAIN THE BUTTER-MAKING EFFICIENCY OF MILK-FAT.

The recent practical methods devised for the purpose of finding out how much fat milk contains, have made it easily possible for any farmer to ascertain the amount of fat in the milk of each of his cows. The question is at present being often asked: "*Does the amount of fat indicate how much butter one can make from the milk?*" The question can be answered by both "Yes" and "No." If one knows only the amount of fat in the milk, and nothing more, it simply indicates how much butter might be made, if no fat were lost in the creaming and churning, and that no more than

this amount could be made. Even in this case, to calculate the theoretical amount of butter that could be made, one should know how much fat the butter is to contain, whether eighty or eighty-five per cent. In our work, we have adopted as our standard, butter containing eighty-five per cent. of fat. Hence, to calculate from the amount of fat in milk the greatest theoretical amount of butter that could be made from such milk, we divide the per cent. of fat in the butter by 0.85, or multiply by 1.175, and the result will be the amount of butter that could be made from 100 pounds of milk, provided no fat were lost in the process of making. For example, if a sample of milk is found to contain 3.85 per cent. of fat, 3.85 divided by 0.85, or multiplied by 1.175, will give 4.53 pounds of butter for 100 pounds of milk. But we know that, in actual experience, no such amount can be fully realized. Then, under what conditions, is the amount of fat in the milk an accurate indication of the amount of butter that can be made from the milk? We may mention three principal conditions:

1. If a process of creaming is employed which removes a uniform amount of fat from the milk, regardless of special conditions, such as time of lactation, size of fat globules, etc. For example, good centrifugal machines, properly managed, will very uniformly separate the fat from the milk, leaving, as a rule, less than one-tenth of one per cent. of fat in the skim-milk.

2. If the cream is properly handled in the process of churning, so as to reduce the loss of fat to a uniform minimum.

3. If the butter is salted and worked so as to make a uniform product, containing a certain proportion of fat.

In order that we may know closely how much butter milk-fat will make, we must, then, know (a) the amount of fat in the milk, (b) the amount of fat that must, of necessity, be lost in the process of manufacture, and (c) the kind or quality of butter made. To illustrate, suppose a milk contains five per cent. of fat. In the creaming process, we lose about 0.1 per cent. and in churning about 0.02 per cent. That would leave for making butter 4.9 pounds of fat for each hundred pounds of milk. This amount of fat divided by 0.85 or multiplied by 1.175 would give 5.76 pounds of butter. Then dividing 5.76, the amount of butter made,

by 5, the amount of fat in the butter, we get 1.15, the amount of butter that is made for each pound of milk-fat. Then, in such a case, where the loss of fat is no greater, we can find out the amount of standard butter that we shall make from 100 pounds of milk by multiplying the per cent. of fat in the milk by 1.15.

From the preceding discussion, it becomes evident that, under the following conditions, the amount of fat in the milk is no accurate guide as to the amount of butter that will be made from the milk :

1. If a method of creaming, as any ordinary gravity method of setting, is employed, which can not be relied upon to give uniform results for the same milk from day to day and for milk from different individuals.

2. If methods are employed in the process of churning, which do not give uniform results in the loss of fat.

3. If the butter is salted and worked without producing a fairly uniform product, making, one day, a product containing seventy-five per cent. of fat and, another day, a product containing eighty or eighty-five per cent. of fat.

No gravity process of creaming is yet known that can be relied upon to cream all kinds of milk, even under the same conditions, with anything like equal or uniform efficiency. A study of the results presented in connection with the comparison of breeds of dairy cattle in regard to butter production shows this truth very strikingly. This can well be shown by presenting simply the figures that show how much butter was made from a pound of fat in the milk of the different breeds : 1.07, 1.04, 0.98, 0.97, 0.93, 0.88. These numbers are not uniform and a study of individuals reveals much greater differences.

XIX. COMPARISON OF METHODS OF CREAMING MILK BY SETTING AND BY CENTRIFUGAL MACHINE.

In carrying on the investigation of dairy breeds of cattle, it was proposed to use for creaming the milk during the second period of lactation the De Laval "Baby Separator No. 2." As a preliminary to carrying out this plan, the separator was used with all the cows, whether in first or second period of lactation, the results being compared with those obtained in the month previous

by the deep-setting process in Cooley cans and vat, in water at a temperature of about 40° F. The "Baby" separator was run at a speed of 6,200 revolutions per minute and the temperature of the milk was from 85° to 90° F.

The following averages from ten cows indicate the difference in the results obtained by the two methods :

	Gravity method.	"Baby" Separator.
Pounds of milk required to make one pound of butter,	32.04	23.17
Per cent. of milk-fat recovered in cream.....	78.5	97.9
Per cent. of milk-fat recovered in butter.....	70.2	93.0
Pounds of butter per month.....	15.9	20.7

In the case of one animal, whose milk at all times has refused to cream by any gravity process employed, the yield of butter was increased from 13.9 pounds to 24.1 pounds by using the separator. The average gain was a little less than five pounds.

XX. ANALYSES OF MATERIALS USED IN SPRAYING PLANTS.

Most of the substances commonly used at present in spraying plants contain some compound of copper; in some instances the copper compounds and other necessary materials are purchased separately, and the mixing is done at home, while, in other cases, special preparations, containing copper compounds and other essential ingredients, mixed ready for application, which are found in the market, are used. The sale of copper compounds in the form of crude materials and of special preparations has increased enormously in the past year or two and, therefore, offers an inviting field for adulteration and imposition.

During the past year, the chemist has examined several copper compounds separately and also some of the special preparations that are being put upon the market. The investigation was undertaken with a view to finding out something in regard to the following points :

1. Whether copper compounds are adulterated.
2. To what extent they are adulterated, if at all.
3. Whether the special preparations put on the market are pure; whether they are mixed in proper proportions, and whether they are offered for sale at reasonable prices.

Samples of four different kinds of materials have been examined, as follows :

1. Copper sulphate in three different forms.
 - (a) Crystals of copper sulphate.
 - (b) Crystals of copper sulphate, powdered.
 - (c) Dried or anhydrous copper sulphate.
2. Copper carbonate in two forms.
 - (a) Precipitated copper carbonate.
 - (b) "Hydrated" copper carbonate.
3. A prepared mixture called "Copperdine," as put up for 1891 and for 1892.
 - (a) Copperdine in dry form.
 - (b) Copperdine in solution.
4. A sample of prepared Bordeaux mixture.

PROPERTIES OF COPPER SULPHATE.

In order that some of the points connected with the analysis of the various samples of copper sulphate may be more clearly understood, a few statements are made regarding some of the properties of copper sulphate before presenting the results of analysis.

Copper sulphate, commonly called blue vitriol, blue stone or copper vitriol, may occur in three forms or conditions. In the form with which we are most familiar, it appears in crystals, varying in size, of a beautiful blue color. One hundred pounds of it contain the following amounts of different elements :

	Pounds.
Copper	25.4
Sulphur.	12.8
Oxygen.....	57.8
Hydrogen	4.0

The four pounds of hydrogen are combined with thirty-two pounds of the oxygen, forming thirty-six pounds of water, which is known commonly as water of crystallization. The remaining 25.8 pounds of oxygen are combined with the sulphur in the same manner as in sulphuric acid, and the oxygen and sulphur, combined with the copper in the proportions above given, together with the water, form crystallized copper sulphate. Stating its

composition in a somewhat different form, we can say that crystallized copper sulphate contains in 100 pounds :

	Pounds.
Copper	25.4
Sulphuric acid (combined).....	38.6
Water	36.0

Now, if we heat 100 pounds of copper sulphate in an oven to the temperature of boiling water, the crystals will gradually lose their color and crumble to pieces, leaving a bluish-white powder. At this temperature, twenty-nine of the thirty-six pounds of water are driven off. If this powder is heated to 400° F, the remaining seven pounds of water will be driven off and we shall obtain a white powder, which is called *anhydrous* or *dehydrated copper sulphate*; that is, copper sulphate free from water. This form of copper sulphate is being put upon the market for spraying mixtures. It has the advantage of being in a finely powdered condition and in a more concentrated form, containing, as it does, if pure, forty pounds of copper per hundred. It possesses the disadvantage of absorbing moisture from the air rapidly, which renders the composition uncertain.

ANALYSES OF COPPER SULPHATE.

1. The first sample of copper sulphate examined was obtained by Mr. D. G. Fairchild from the Nichols Chemical Company (Laurel Hill Chemical Works), 45-49 Cedar street, New York city. This sample contained 99.6 per cent. of copper sulphate. This was practically pure. In order to make sure that this sample was not misleading, another sample was obtained from the company through Mr. Morton Minot of Brockport, and thus gave the same results, on analysis, as the first sample.

2. The next sample of copper sulphate was obtained from one of the drug stores in Geneva. It contained 98.1 per cent. of copper sulphate.

3. The third sample of copper sulphate was sent to the Station for analysis by Mr. J. Burroughs, West Park, N. Y. It contained 98.6 per cent. of copper sulphate. This sample contained a considerable amount of free or uncombined sulphuric acid, which had partially destroyed or eaten the paper wrapped around it.

The presence of the free sulphuric acid would not render the copper sulphate injurious, if it were intended for use in the Bordeaux mixture or for the preparation of copper carbonate, since, in either case, the free acid would be completely removed or neutralized in such a way as to form a harmless compound.

4. The fourth sample of copper sulphate examined was in powdered form; that is, the ordinary crystallized copper sulphate reduced to a fine powder by grinding. This was obtained from W. S. Powell & Co., Baltimore, Md., and contained 98.1 per cent. of copper sulphate. This sample contained noticeable quantities of dirt, which was present probably by accident rather than by design. It is readily seen that powdered copper sulphate offers a better opportunity for adulteration than do the large crystals.

5. The next sample was crystallized copper sulphate, sent out by W. S. Powell & Co. for the season of 1892. It contained 99.6 per cent. of copper sulphate.

6. The sixth sample was powdered crystallized copper sulphate, from W. S. Powell, for the season of 1892. It had evidently lost some of its water of crystallization and was, therefore, found to contain about one per cent. more of copper than ordinary crystallized copper sulphate. The sample contained a small amount of insoluble dirt.

7. The seventh and last sample of copper sulphate was called "dried copper sulphate," and was sent out by W. S. Powell & Co. for the season of 1892. This sample was found to contain 90.8 per cent. as much copper sulphate as copper sulphate which has been thoroughly dried at 212° F. should contain, or 81.8 per cent. as much as should be contained in copper sulphate which has been dried completely at 400° F. Copper sulphate in this form very readily absorbs moisture, and the diminished per cent. was doubtless due to the fact that after it was dried it absorbed some moisture. The sample contained some dirt. The main objection to be urged against buying copper sulphate in this dried form is that the composition is very apt to be uncertain, owing to its tendency to absorb moisture when it is exposed to the air.

PROPERTIES OF COPPER CARBONATE.

Copper carbonate is a somewhat complex chemical compound, and it would take us too far into chemistry to attempt to explain

its composition in detail. Suffice it to say that most of the copper carbonate we have to deal with contains, if pure, in 100 pounds:

	Pounds
Copper	57.4
Carbon	5.4
Oxygen.....	36.3
Hydrogen.....	0.9

It is known in nature in crystalline form under the name of malachite. Copper carbonate, when made by precipitation, as is the case in the common methods of artificial preparation, is a greenish powder. Unless thoroughly washed, it will contain some sulphate, when made in the ordinary way. The sulphate probably does no harm in spraying mixtures when the quantity is small.

ANALYSES OF COPPER CARBONATE.

1. The first sample of copper carbonate examined was obtained at one of the Geneva drug-stores. It contained 88.1 per cent. of copper carbonate. The sample dissolved to a clear solution in acids, except a small amount of dirt which remained in suspension. The diminished per cent. of copper carbonate was probably due to the presence of some moisture, though this was not determined.

2. The second sample was obtained from another drug-store in Geneva. It contained 62.8 per cent. of copper carbonate. This sample contained a considerable quantity of some kind of white powder, which failed to dissolve in nitric acid. The presence of this insoluble matter, coupled with the low per cent. of copper carbonate, gave evidence of serious adulteration. With pure copper carbonate at forty cents a pound, this sample was worth not over twenty-five cents a pound.

3. The third sample of copper carbonate came from W. S. Powell & Co., Baltimore, Md., and was put up for the season of 1892. It contained 89.4 per cent. of copper carbonate. It was found to be not entirely free from sulphate. It did not make a perfectly clear solution in acids.

4. The fourth sample was called "hydrated copper carbonate." So far as could be ascertained, this "hydrated" compound is nothing more than the ordinary copper carbonate saturated with water. Taking the mixture as it was, it contained 59.4 per cent.

of copper carbonate. It was not entirely free from dirt and contained a considerable amount of sulphate. There is one advantage in having the copper carbonate saturated with water, it dissolves more readily in ammonia. This, however, is an operation that is not beyond the ability of the average fruit-grower, who could himself well moisten the carbonate with water before treating with ammonia. The objections to putting such a form on the market are (1), that it is not needed, since any one can "hydrate" his copper carbonate by mixing it with water; (2) the manufacturer places no guarantee upon it, and it contains less than sixty per cent. as much copper carbonate as the simple dry copper carbonate. It would be possible to overcome this latter objection.

ANALYSES OF "COPPERDINE."

1. The first sample of copperdine analyzed was in dry form, prepared for the season of 1891. It was put up in a two-pound can and claimed to be a mixture of copper carbonate and ammonium carbonate, in the proportions recommended by the United States Department of Agriculture. The price of the two-pound can was seventy-five cents. The materials were not very well mixed, so, in order to obtain a fair sample for analysis, over half of the contents of the can was removed and mixed thoroughly; from this a sample was taken for analysis. The mixture, on analysis, was found to contain nearly seven per cent. of copper, which would be equivalent to about two and one-quarter ounces of copper in the whole two-pound can. This amount of copper is equivalent to about eight and three-quarters ounces of copper sulphate, or to about four ounces of copper carbonate. The two pounds of dry copperdine, therefore, contained about four ounces of copper carbonate and twenty-eight ounces of ammonium carbonate. If these materials were purchased at retail at a drug-store in Geneva, they would cost as follows:

	Cents.
Four ounces of copper carbonate, at forty cents per pound.....	10
Twenty-eight ounces ammonium carbonate, at eleven cents per pound.....	19

Total cost of materials in two pounds of dry copperdine.... 29

If the copper carbonate were made from copper sulphate and sal soda, the cost of four ounces would be about four cents, instead of ten cents, and this would reduce the cost of two pounds of copperdine to twenty-three cents. Allowing for the cost of mixing, which is very slight, and of the tin can, in which the material is put up, two pounds of copperdine can hardly cost the manufacturer more than thirty or thirty-five cents. As each two-pound can sells for seventy-five cents, the margin of profit is not difficult to calculate.

Another question arises in connection with the use of this mixture, and that is this, "Is it properly prepared so that when used in accordance with the directions given, it will not be too weak or too strong? The directions on the can indicate that the two pounds of material are to be dissolved in forty gallons of water, making an equivalent of about one ounce of copper carbonate to ten gallons of water, which is the exact strength recommended by the United States Department of Agriculture.

The mixture easily dissolved in water, forming a clear solution. While this preparation is properly made, so far as regards strength, the fruit-growers can decide whether it is the most economical form to purchase for use.

2. Another sample of dry copperdine, as prepared for the season of 1892, was examined. Its general characteristics were like those of the first sample. It was found to contain 7.35 per cent. of copper, equivalent to about one-tenth of an ounce more of copper than the first sample. It was found to contain some sulphate. When dissolved in water, the solution was turbid and dirty. This sample was sent out under the name of "ammoniated carbonate of copper."

3. The "liquid copperdine," as put up for 1891, was found to contain two per cent. of copper, equivalent to about one and one-eighth ounces of copper carbonate. The liquid form, therefore, contained a little more than one-fourth the copper carbonate contained in the dry form. The cost of its materials, reckoned on the same basis, would be eight and one-half cents. Allowing for cost of mixing and of can, the total cost of two pounds of "liquid copperdine" might, perhaps, approximate as high as twelve or fifteen cents. Each two-pound can sold for fifty cents, giving a considerably increased rate of profit, even over the dry form.

As regards its strength, when used according to directions, the liquid form as put up for 1891 was found too dilute. The directions for using are to dilute the contents of one two-pound can in seven bucketfuls of water, which may mean anywhere from twenty to thirty gallons. Taking the lower number, we should then have an equivalent of one and one-eighth ounces of copper carbonate to twenty gallons of water, while the official proportions are an equivalent of one ounce of copper carbonate in ten gallons of water. The solution made from this "liquid copperdine" for 1891 was, therefore, only about half as strong as the official solution; and, if one used thirty gallons of water for dilution, then the solution would be only one-third as strong as it should.

4. A sample of "liquid copperdine," as prepared for the season of 1892, was also examined. It was found to contain 4.73 per cent. of copper, or nearly two and one-half times as much copper as the sample prepared for 1891. This mixture is, therefore, of proper concentration. It is a solution of copper carbonate in ammonia. It contained some sulphate.

ANALYSIS OF "PREPARED BORDEAUX MIXTURE."

This sample was from a lot prepared for the season of 1892. It is put up in dry form. It was found to contain 11.62 per cent. of copper. The official mixture contains 15.24 per cent. of copper. Hence this "prepared" Bordeaux mixture contains only 76.2 per cent. as much copper as it should contain. This may be due to incomplete mixing of materials.

SUMMARY OF RESULTS.

1. *Copper sulphate*, in the form of large crystals, may be relied upon as being fairly pure; but, when it is in the form of powder, it is always safe to test its purity. The dried form of copper sulphate is objectionable on account of the uncertainty of its composition, which changes on exposure to air, and, being in powdered form, it can readily be adulterated. The comparatively low price of copper sulphate does not offer the temptation for adulteration that the more expensive form of carbonate does.

2. *Copper carbonate*, on account of its relatively high price, and also on account of its finely divided condition is, probably, quite liable to adulteration, and should always be tested. All the

samples that were tested for sulphate showed its presence, but probably not to an injurious extent.

3. "*Copperdine*," in dry form, costs the fruit-grower twice as much as he himself could prepare it for, but contains the proper amount of copper.

"Copperdine" in liquid form, as put up in 1891, cost three or four times as much as it could be prepared for, and contained only one-half or one-third as much copper as it should. It was, therefore, worse than worthless, since its use would mislead fruit-growers. However, the sample for 1892 proved to be up to official strength. The samples of copperdine for 1892 showed the presence of sulphates.

4. The "prepared" Bordeaux mixture for 1892 does not appear to be up to the required official strength.

HOW TO DETECT IMPURITIES IN COPPER COMPOUNDS.

While the help of a chemist is needed to tell how much copper a substance contains, a few suggestions may be given which will enable anyone to test roughly samples of copper sulphate and copper carbonate, as well as Paris green, in regard to their purity.

1. *Copper sulphate*, if pure, should dissolve completely in warm water, making a clear solution, free from sediment or suspended matter.

2. *Copper carbonate* should dissolve completely in nitric acid, commonly called aqua fortis. If it does not dissolve completely, it is impure and probably adulterated. Copper carbonate, if pure, should also dissolve completely, or nearly so, in strong ammonia water, used in considerable quantity. Both the foregoing tests should be applied. Of course, copper carbonate could be adulterated by using finely powdered or dried copper sulphate, but this could easily be detected by treating with water, since copper sulphate easily dissolves in water, while copper carbonate does not.

3. *Paris green* should, if pure, dissolve completely in strong ammonia water, used in liberal quantity.

Such simple tests as the foregoing may be applied by anyone, and while they will not prove an infallible guide, they will serve

as a fairly reliable indication regarding the purity of the compounds mentioned. When adulterants are added, they have generally been found to exist in the form of some finely powdered white substances, such as barium sulphate, gypsum, etc., which are insoluble in water, acids or alkalies.

IMPORTANCE OF USING PURE CHEMICALS AND MIXTURES.

Contradictory results have been obtained in using copper compounds and prepared mixtures for spraying fruit trees, grape vines, etc. It is suggested that, in many cases, the widely varying results may have been due to the use of impure copper compounds, which failed to make spraying mixtures of the required degree of strength. The use of commercially prepared mixtures of inferior strength may also account for some failures. It can readily be seen that purity and strength of chemical preparations are absolutely necessary, if trustworthy results are to be expected.

CONCLUSION.

Fruit-growers who have to use large quantities of copper compounds should, for the sake of economy, buy the separate ingredients of some reliable house, that can guarantee purity. They should test their compounds, to make doubly sure, and should do their own mixing. Persons who have occasion to use only small amounts of spraying mixtures may find it advantageous and economical of time to purchase prepared mixtures ready for use, provided they can be sure that the preparation is reliable in strength, and not extravagantly high in price.

XXI. ANALYSES OF SPRAYED GRAPES.

In September, 1891, the New York city board of health seized and destroyed large quantities of grapes, on the ground that they had been sprayed with copper compounds and were poisonous. This action caused a serious loss to many grape-growers. Mr. D. G. Fairchild, representing the United States Department of Agriculture, visited the Hudson river region, where the grapes were grown which had been seized. He took pains to secure the worst sprayed branches of grapes obtainable from those vineyards from

which the condemned grapes came. These samples were given to the chemist of this station for analysis.

In some instances, the copper compounds could be seen upon the berries, but it could be seen to be more plentiful upon the stems. In three samples, the berries were separated from the stems and the amount of copper determined upon each. In one instance, the berries and stems were not separated. Mr. Jenter assisted in making the determinations.

The samples from Marlborough were taken from two different vineyards. The samples 3 and 3a were from the same vineyard; in sample 3a, the copper was estimated upon the berries and stems together and not separately. In the table below, the copper is given as metallic copper, the number of grains found for one pound of berries and stems.

LOCALITIES WHERE SAMPLES OF GRAPES WERE OBTAINED.	FROM ONE POUND OF BERRIES AND STEMS.		
	Grains, esti- mated as metal- lic copper, on berries.	Grains, esti- mated as metal- lic copper, on stems.	Grains, esti- mated as metal- lic copper, on berries and stems.
(1.) Milton, N. Y	$1\frac{1}{20}$	.....	$\frac{1}{50}$
(1.) Milton, N. Y . . . . .	.....	$\frac{1}{30}$	
(2.) Marlborough, N. Y	$1\frac{1}{20}$	.....	$\frac{1}{40}$
(2.) Marlborough, N. Y . . . .	.....	$\frac{1}{60}$	
(3.) Marlborough, N. Y	$1\frac{1}{20}$	.....	$\frac{1}{12}$
(3.) Marlborough, N. Y . . . .	.....	$\frac{1}{14}$	
(3a.) Marlborough, N. Y . . . .	.....	.....	$\frac{1}{16}$
Average for all samples.	$1\frac{1}{20}$	$\frac{1}{30}$	$\frac{1}{20}$

The results embodied in the table above, we may summarize as follows :

1. The amount of copper, estimated as metallic copper, found on the *berries*, was very constant in the different samples, averaging one one-hundred-and-twentieth of a grain for each pound of fruit (berries and stems).

2. The amount of copper, estimated as metallic copper, found on the *stems*, varied from one-ninetieth to one-fourteenth of a grain for each pound of fruit (berries and stems), and averaged one-thirtieth of a grain.

3. If the copper were on the berries in the form of sulphate of copper, each pound of berries would contain about one-thirtieth of a grain of copper sulphate. When copper sulphate is prescribed by physicians as a tonic or astringent, the dose is from one-fourth to two-grains. Hence, if a person were to eat and swallow the grapeskins as well as the pulp of the berry, it would be necessary to eat from seven and one-half to sixty pounds of grapes, in order to get a tonic dose of copper sulphate. Or, if one were to eat berries and stems, it would be necessary to eat from one and one-quarter to ten pounds, to get a tonic dose of copper sulphate.

To get an amount of copper that would be regarded as serious, if taken at one dose, one would need to eat not less than 3,000 pounds of grapes, skins included, or not less than 500 pounds, including berries and stems; and it is safe to say, that if an attempt were made to get a dangerous dose of copper into the body in this way in a short time, a person would be in a dangerous condition, many times, from the grapes alone, before running any risk from the copper. To state the matter in another way, if one were to eat, each day, one pound of these worst sprayed grapes, including the skins, and if all the copper taken in this way were to accumulate in the body, it would require over eight years to accumulate an amount of copper that would, if taken at one dose, be considered dangerous, not necessarily fatal.

4. As a matter of fact, copper, when found upon sprayed grapes in New York State, exists, not in the form of a sulphate, but in the form of a carbonate or hydroxide, both of which forms are not readily soluble and which would, therefore, be even less dangerous than if present in the form of sulphate of copper. Most of the copper found was on the stems, which people do not eat; and the rest of the copper was on the outside of the skin of the berries, which most people do not eat.

5. The results obtained from estimating by chemical analysis the amount of copper on grapes, which were selected as being the worst sprayed that could be found, therefore, seem to justify the assertion that it is simply an absolute impossibility for a person to get enough copper from eating grapes to exercise upon the health any injurious effect whatever.

XXII. EXPLANATION OF TERMS OF CHEMICAL ANALYSIS IN RELATION TO FERTILIZERS.

By turning to the tables containing the analyses of fertilizers at the end of this report, it will be noticed that the following terms are used to express the results of the analysis of fertilizers :

Nitrogen.—Determined as nitrogen ; equivalent to ammonia.

Phosphoric Acid.— Available ; insoluble ; total.

Potash soluble in water.—Determined as potash.

The figures that are used to express the results of chemical analysis indicate *parts per hundred*, or, in other words, *how many pounds there are of each constituent in 100 pounds of fertilizer*. For example, take No. 119 ; under “Determined as nitrogen,” we find the number, 3.49, which means that in 100 pounds of fertilizer there are 3.49 pounds of nitrogen. This amount of nitrogen is equivalent to 4.24 pounds of ammonia. Likewise, 100 pounds of the same fertilizer contain 13.21 pounds of available phosphoric acid, 0.43 pound of insoluble phosphoric acid, 13.64 pounds of total phosphoric acid, and 2.92 pounds of potash soluble in water.

NITROGEN.

1. *Determined as nitrogen.*

Nitrogen is a gas and, in this form, can not be used in fertilizers. Therefore, whenever we speak of nitrogen in fertilizers, we do not mean that nitrogen exists in them as simple nitrogen. The nitrogen in fertilizers is always combined with other elements and may be present in one or more different forms — (1st) in the form of nitrates, as nitrate of soda ; (2d) in the form of ammonia compounds, as sulphate of ammonia ; and (3d) in the form of organic matter, animal or vegetable, as dried blood, meat, tobacco stems, etc. Chemical analysis according to official methods does not attempt to ascertain and state in which form or forms the nitrogen is present in a fertilizer. Therefore, *the numbers in the column under “DETERMINED AS NITROGEN” are intended to state simply the amount of nitrogen present without regard to the form in which it is present*, or, expressed in another way, how much nitrogen there would be, if it were present in the form of pure nitrogen or nitrogen gas.

2. *Nitrogen equivalent to ammonia.*

Ammonia consists of *nitrogen combined with hydrogen*. A pound of nitrogen will form more than a pound of ammonia, because the ammonia formed from a pound of nitrogen will contain that pound of nitrogen plus the necessary amount of hydrogen added to form ammonia. The chemical relations of nitrogen and ammonia are such that fourteen pounds of nitrogen will unite with exactly three pounds of hydrogen, and will, therefore, produce just seventeen pounds of ammonia; or one pound of nitrogen will make 1.214 pounds of ammonia. The figures contained in the column under "Equivalent to ammonia" are, therefore, obtained by multiplying the figures in the column under "Determined as nitrogen" by 1.214. The figures in the "Equivalent to ammonia" column do not indicate that the fertilizers actually contain those amounts of ammonia, for they may contain no ammonia compounds at all, but it is intended to state under "EQUIVALENT TO AMMONIA" *simply how much ammonia there would be, if the nitrogen were all in the form of Ammonia.*

If, as is the usual practice, the manufacturer's guarantee analysis states the amount of nitrogen only in the form of ammonia, and if it is desired to know how much nitrogen the ammonia contains, simply multiply the number representing the amount of ammonia by .8235, since one pound of ammonia contains .8235 pounds of nitrogen.

Manufacturers very commonly express the amount of nitrogen in the equivalent of ammonia, probably for the reason that, expressed as ammonia, larger figures are obtained than would be, if expressed as nitrogen; and the fertilizers appear to farmers to contain more nitrogen. While this method is in accordance with legal requirements and is entirely fair on the part of the manufacturers, *farmers should know that "nitrogen" and "ammonia" are not the same thing, since one pound of ammonia contains only about eight-tenths of a pound of nitrogen.*

PHOSPHORIC ACID.

When we use the term "phosphoric acid" in connection with the chemical analysis of fertilizers, we mean a compound containing phosphorus and oxygen, which compound is really not phosphoric acid at all and which could not well exist in fertilizers;

but chemists have, as a matter of convenience, adopted this form of statement. So, when the term "phosphoric acid" is used, it means simply the compound of phosphorus and oxygen known chemically as phosphorus pentoxide or phosphorus anhydride. *The numbers in the columns under "PHOSPHORIC ACID" state the amount of the phosphorus oxide above mentioned, that is equivalent to the phosphoric acid in the form of phosphates of lime (or calcium) actually existing in the fertilizer.*

In the analytical tables, the amount of phosphoric acid is stated under three different heads or forms —(1st) "Available" phosphoric acid, (2d) "Insoluble" phosphoric acid, and (3d) "Total" phosphoric acid. The "phosphoric acid" in these terms is used in the sense already explained.

1. *Available phosphoric acid.*

The figures in the column under "available" represent the amount of phosphoric acid that is present in the form of *soluble calcium phosphate*, plus the amount present in the form of *reverted calcium phosphate*. As explained in Bulletin 27, page 420, paragraphs 52 and 53, *soluble calcium phosphate* is formed by treating with sulphuric acid some form of insoluble calcium phosphate, such as bones, bone-ash, South Carolina rock, etc. The phosphate thus formed is readily *soluble* in water. This soluble phosphate, on standing, is, to some extent, changed into a less soluble form, which is still quite readily available as plant food. Since both the *soluble* and *reverted* forms of phosphates are *available as plant food*, we include in a statement of analysis under the head of "AVAILABLE" PHOSPHORIC ACID, *the phosphoric acid that is present in the forms of both soluble and reverted calcium phosphates.*

2. *Insoluble phosphoric acid.*

The figures in the column under "INSOLUBLE" PHOSPHORIC ACID represent the amount of phosphoric acid that is present in the form of *insoluble calcium phosphate*. This form is not soluble in water and is the least valuable form of phosphates.

3. *Total Phosphoric Acid.*

The figures in the column under "TOTAL" PHOSPHORIC ACID represent the entire amount of phosphoric acid present in a fertilizer,

without regard to the form in which it exists. The total phosphoric acid is, therefore, the sum of the available and insoluble phosphoric acid.

POTASH.

The term "potash," as used in connection with the analysis of fertilizers, always means the compound containing potassium and oxygen, known as potassium oxide, though it originally meant the carbonate of potassium. Potash or potassium oxide is never found as such in fertilizers, but chemists use this form of expressing results of analysis as a convenient standard for reference. Fertilizers generally contain potash in such forms as sulphate of potash, chloride of potash or carbonate of potash; and *the figures in the column under "DETERMINED AS POTASH" represent the amount of actual potash (potassium oxide) that is equivalent to the sulphate, chloride or carbonate of potash present.* The "Potash soluble in water" represents the available potash and only this is determined. The forms of potash commonly present in commercial fertilizers such as the chloride, sulphate and carbonate, are readily soluble in water and are, therefore, available as plant food.

TOTAL CONSTITUENTS OF FERTILIZERS.

If we add together the figures representing the different constituents of a fertilizer (the nitrogen, the total phosphoric acid, and the potash), we shall find, as a rule, that the sum amounts to only twenty or thirty per cent. or pounds per hundred. The question often arises "Why does the sum of the constituents in the analysis of a fertilizer amount to only twenty or thirty per cent., and what is the remaining portion, amounting to seventy or eighty per cent. made up of?" A few illustrations will, perhaps, suffice to make the matter clear.

Taking, first, a high-grade fertilizer, we find by analysis that it contains three per cent. of nitrogen, eight per cent. of available phosphoric acid, two per cent. of insoluble phosphoric acid, and ten per cent. of potash. If the nitrogen comes from dried blood or meat, it will take about ten pounds of such material to furnish one pound of nitrogen. Since there are three per cent. of nitrogen, or three pounds of nitrogen in 100 pounds of fertilizer, it will take 30 pounds of dried blood to furnish this amount of nitrogen.

The amount of bone and sulphuric acid necessary to make a phosphate containing eight pounds of available phosphoric acid and two pounds of insoluble phosphoric acid would amount to about forty pounds. If the potash is present in the form of a sulphate, about eighteen and one-half pounds of pure sulphate would be required to be equivalent to ten pounds of potash. Tabulating the foregoing figures, we have the following :

	Pounds.
Dried blood required to furnish three pounds of nitrogen.....	30
Bone and sulphuric acid required to furnish phosphates containing eight pounds of available and two pounds of insoluble phosphoric acid	40
Sulphate of potash (pure) equivalent to ten pounds of potash..	18½
Moisture and dirt.....	11½
Total.....	<u>100</u>

Taking a low grade fertilizer, we find by analysis that it contains 0.8 per cent. of nitrogen, eight per cent. of available phosphoric acid, 0.5 per cent. insoluble phosphoric acid and two per cent. of potash. Supposing the sources to be the same as in the previous case, we should have

	Pounds
Dried blood required to furnish 0.8 pounds of nitrogen.....	8
Bones, etc., required to furnish eight pounds of available and 0.5 pounds insoluble phosphoric acid	37
Sulphate of potash (pure) equivalent to two pounds of potash,	3.7
Moisture, dirt, etc	51.3
Total.....	<u>100</u>

While the foregoing calculations would not be entirely accurate for many fertilizers, they serve to give a fair idea of what a hundred pounds of a fertilizer may be made up, and why the chemist's statement of analysis does not account for more than twenty or thirty pounds in 100 pounds.

XXIII. METHOD OF MAKING COMMERCIAL VALUATIONS OF FERTILIZERS.

PRICES OF NITROGEN, PHOSPHORIC ACID AND POTASH.

The following schedule of trade values is the one to be used in calculating the commercial value of fertilizers during the years of 1890 and 1891 :

Trade-values of fertilizing ingredients in raw materials and chemicals, adopted by Experiment Station.

	1890. Cts. per pound.	1891. Cts. per pound.
Nitrogen in ammonia salts.....	17	18½
Nitrogen in nitrates.....	14½	14½
Organic nitrogen in dry and fine ground fish, meat and blood.....	17	15½
Organic nitrogen in cotton-seed meal and castor-pomace,	15	15
Organic nitrogen in fine ground bone and tankage.....	16½	15
Organic nitrogen in fine ground medium bone and tankage	13	12
Organic nitrogen in medium bone and tankage	10½	9½
Organic nitrogen in coarse bone and tankage.....	8½	7½
Organic nitrogen in hair, horn shavings and coarse fish scraps	8	7
Phosphoric acid, soluble in water....	8	8
Phosphoric acid, soluble in ammonium citrate	7½	7½
Phosphoric acid in dry ground fish, fish-bone and tankage,	7	7
Phosphoric acid in fine medium bone and tankage	6	5½
Phosphoric acid in medium bone and tankage	5	4½
Phosphoric acid in coarse bone and tankage.....	4	3
Phosphoric acid in fine ground rock phosphate	2	2
Potash as high-grade sulphate, in forms free from muriates (chlorides), in ashes, etc.....	6	5½
Potash in kainit	4½	4½
Potash in muriate.....	4½	4½
Organic nitrogen in mixed fertilizers	17	15½
Insoluble phosphoric acid in mixed fertilizers.....	2	2

The trade-values in the foregoing schedule represent the average prices at which, in the six months preceding March, the respective ingredients, in the form of unmixed raw materials,

could be bought at retail for cash in our large markets — Boston, New York and Philadelphia. * These prices also correspond to the average wholesale prices for the six months preceding March, plus about twenty per cent. in case of goods for which there are wholesale quotations.

WHAT THE COMMERCIAL VALUATION OF A FERTILIZER IS.

The commercial valuation of a fertilizer consists in estimating the approximate value or money-cost of the essential fertilizing constituents (nitrogen, phosphoric acid and potash) in one ton of fertilizer.

VALUATION AND COST OF FERTILIZERS.

The total cost (to the farmer) of a ton of commercial fertilizer may be regarded as being usually made of the following elements: (1) Retail cash cost, in the market, of unmixed trade materials; (2) cost of mixing; (3) cost of transportation; (4) storage, commissions to agents and dealers, selling on long credit, bad debts, etc. While the *total cost* of a fertilizer is made up of several different elements, a *commercial valuation* includes only the first of the elements entering into the total cost, that is, the retail cash cost, in the market, of unmixed raw materials.

VALUATION AND AGRICULTURAL VALUE.

The *agricultural value* of a fertilizer depends upon its *crop-producing power*. A commercial valuation does not necessarily have any relation to crop-producing value. For a particular soil and crop, a fertilizer of comparatively low commercial valuation may have a higher agricultural value than another fertilizer with a higher valuation; while for another crop on the same soil or the same crop on another soil, the reverse might be true.

HOW TO MAKE A COMMERCIAL VALUATION OF A FERTILIZER FROM A STATEMENT OF CHEMICAL ANALYSIS AS GIVEN BY THIS STATION.

1. Nitrogen.

Multiply the number representing the per cent. of nitrogen by fifteen and a half cents (the value adopted for organic nitrogen in mixed fertilizers). This will give the value in cents of the nitrogen in 100 pounds of fertilizers.

Example.— In No. 119, the per cent. of nitrogen found by analysis is 3.49; hence, $3.49 \times 15\frac{1}{2}$ cents = 54 cents.

2. *Available phosphoric acid.*

Multiply the number representing the per cent. of available phosphoric acid by eight cents which will give the value, in cents, of the available phosphoric acid in 100 pounds of fertilizer.

Example.—In No. 119 the per cent. of available phosphoric acid is 13.21; hence, $13.21 \times 8 \text{ cents} = 105.6 \text{ cents}$.

3. *Insoluble phosphoric acid.*

Multiply the number representing the per cent. of insoluble phosphoric acid by two cents, which will give the value, in cents, of the insoluble phosphoric acid in 100 pounds of fertilizer.

Example.—In No. 119, the per cent. of insoluble phosphoric acid is .43, hence $.43 \times 2 \text{ cents} = .8 \text{ cents}$.

4. *Potash.*

Multiply the number representing the per cent. of potash by five and one-half cents (if the potash is known to be present in the form of sulphate or carbonate) or by four and one-half (if the potash is known to be present in the form of muriate (chloride), kainit, etc.). The result will be the value, in cents, of the potash present in 100 pounds of fertilizer.

Example.—In No. 119, the per cent. of potash is 2.92. As the analysis does not state the form in which the potash is present, we will assume that it is in the form of sulphate; hence $2.92 \times 5\frac{1}{2} \text{ cents} = 16 \text{ cents}$.

5. *Valuation of one ton of fertilizer.*

Add together the numbers representing the values, in cents, of nitrogen, available phosphoric acid, insoluble phosphoric acid and potash. The sum will give the value, in cents, of the fertilizing constituents in 100 pounds of fertilizer. Multiply this sum by twenty, which will give the value, in cents, of the fertilizing ingredients in one ton of fertilizer.

Example.—Taking No. 119 and the preceding values obtained, we have:

		Cents.
(1.) Nitrogen.	$3.49 \times 15\frac{1}{2} =$	54.0
(2.) Available phosphoric acid. . .	$13.21 \times 8 =$	105.6
(3.) Insoluble phosphoric acid. . .	$0.43 \times 2 =$	0.8
(4.) Potash	$2.92 \times 5\frac{1}{2} =$	16.0
(5.) Total valuation of 100 pounds.		176.4
(6.) Total valuation of 2,000 pounds or one ton		

$$176.4 \text{ cents} \times 20 = \begin{cases} 3,528 \text{ cents or} \\ \$35.28. \end{cases}$$

HOW TO MAKE A COMMERCIAL VALUATION OF A FERTILIZER FROM A MANUFACTURER'S GUARANTEE-ANALYSIS.

The forms of statement used by manufacturers in giving guaranteed analyses differ considerably from one another; they also differ from the form of statement adopted by this Station, generally in the following respects:

(a.) The amount of each ingredient is stated as being between two limits varying more or less widely. Thus, in the guaranteed analysis of No. 119, ammonia equals three to four per cent.; available phosphoric acid equals ten to twelve per cent.; insoluble phosphoric acid equals one to three per cent.; potash equals two to three per cent. In making a valuation from such a form of statement of analysis, *the lower number is always to be used*, since the manufacturer is held by law only to the lower guarantee.

(b.) The per cent. of nitrogen in the guarantee-analysis of manufacturers is generally given in the form of ammonia. In these fertilizer reports, both forms are given. When, as in most cases, the guarantee-analysis states only the amount of ammonia, its equivalent of nitrogen is calculated by us and given in the Station form of statement, though not given in the manufacturers' form of guarantee.

(c.) The per cent. of potash is often given in the guarantee-analysis in the form of sulphate or muriate (chloride) of potash. In the Station form of statement, the manufacturer's guarantee is always made to give the actual potash.

In making valuations from guarantee-analyses as given in the Station reports, the same rule will be followed as given above, but when it is desired to use the manufacturers' actual statement of analysis as a basis for making a valuation, some modifications must be made in the foregoing rule.

1. Nitrogen.

If the amount of actual nitrogen is given, proceed as above under Station analysis. If nitrogen is stated only in form of ammonia, then multiply the lower numbers representing the per cent. of ammonia by .8235, which will give the per cent. of actual nitrogen; and this multiplied by fifteen and one-half cents will give the value of ammonia or its equivalent of nitrogen in 100 pounds of fertilizer.

Example.—In No. 119, the per cent. of ammonia, as given in the guarantee-analysis, is 3 to 4. Hence, $3 \times .8235 = 2.47$ per cent. nitrogen; $2.47 \times 15\frac{1}{2}$ cents = 38 cents.

2. Available and insoluble phosphoric acid.

Use the lower number of the guarantee-analysis and proceed as in valuation from Station analysis given above.

3. Potash.

If the per cent. of actual potash is given, then proceed as above in valuation from Station analysis. If potash is given as sulphate, then multiply the per cent. of sulphate by .54, which will give the amount of actual potash equivalent to the sulphate. Multiply the number thus obtained by five and one-half cents. If the potash is given in the form of muriate (chloride), multiply the per cent. of muriate (chloride) by .63, and then multiply the result by four and one-half cents.

Example.—A fertilizer is guaranteed to contain “six to eight per cent. of potash as sulphate;” $6 \times .54 = 3.24$ per cent. of actual potash; $3.24 \times 5\frac{1}{2}$ cents = 17.8 cents, the value of potash as sulphate in 100 pounds of fertilizer.

Example.—A fertilizer is guaranteed to contain five to seven per cent. of potash as muriate (chloride); $5 \times .63 = 3.15$ per cent. of actual potash; $3.15 \times 4\frac{1}{2}$ cents = 14.1 cents, the value of the actual potash as muriate in 100 pounds of fertilizer.

4. Valuation of one ton.

Proceed as under valuation from Station analysis.

Example.—A guarantee analysis is as follows: Ammonia equals two to three per cent.; available phosphoric acid equals ten to twelve per cent.; insoluble phosphoric acid equals one to two per cent.; potash as sulphate equals five to six per cent.

	Cents.
(1.) $2 \times .8235 = 1.64$ per cent. actual nitrogen; $1.64 \times 15\frac{1}{2}$ cents =	
value of nitrogen	25.4
(2.) 10×8 cents = value of available phosphoric acid.....	80.0
(3.) 1×2 cents = value of insoluble phosphoric acid.....	2.0
(4.) $5 \times .54 = 2.7$ per cent. actual potash; $2.7 \times 5\frac{1}{2}$ cents =	14.8
Total value of 100 pounds =	122.2
$122.2 \times 20 = 2,444$ cents or \$24.44 per ton.	

HOW TO MAKE A COMMERCIAL VALUATION OF SOME UNMIXED CHEMICALS.

1. *Sulphate of ammonia.*

Multiply the per cent. of ammonia by .8235 and then multiply the obtained result by eighteen and one-half cents (the price of one pound of nitrogen in the form of ammonia salts). Multiply the result by twenty.

Example.—A manufacturer guarantees the ammonium sulphate sold by him to contain twenty per cent. of ammonia.

$$.8235 \times 20 = 16.47 \text{ per cent. of ammonia.}$$

$16.47 \times 18\frac{1}{2} \text{ cents} = 304 \text{ cents, the value of the nitrogen in 100 of ammonium in sulphate.}$

$$304 \text{ cents} \times 20 = 6,080 \text{ cents or } \$60.80 \text{ per ton.}$$

2. *Sulphate of potash.*

Multiply the guaranteed per cent. of sulphate of potash by .54 and the result by five and a half and the product by twenty.

Example.—A manufacturer guarantees his product to contain forty per cent. of sulphate of potash; $.54 \times 40 = 21.6$ per cent. of actual potash; $21.6 \times 5\frac{1}{2} = 118.8$ cents, the value of actual potash in 100 pounds of sulphate.

$$118.8 \text{ cents} \times 20 = 2,376 \text{ cents or } \$23.76 \text{ per ton.}$$

3. *Muriate (chloride) of potash.*

Multiply the per cent. of muriate guaranteed by .63; then this result by four and one-half cents, and this product by twenty.

4. *Nitrate of soda.*

Multiply the guaranteed per cent. of nitrate of soda by 16.47 to find the per cent. of nitrogen. Multiply the per cent. of nitrogen by fourteen and one-half cents (the value of one pound of nitrogen in the form of nitrates), then multiply the last result by twenty to get the value of one ton.

As a matter of convenience for reference, there are given below in brief form the methods already used in converting one

chemical compound into an equivalent of some other chemical compound :

- (1.) To change ammonia into an equivalent amount of nitrogen,
multiply amount of ammonia by..... .8235
- (2.) To change nitrogen into an equivalent amount of ammonia,
multiply amount of nitrogen by..... 1.214
- (3.) To change muriate (chloride) of potash into an equivalent
amount of actual potash, multiply amount of muriate by .63
- (4.) To change actual potash into an equivalent amount of
muriate (chloride) of potash, multiply amount of actual
potash by..... 1.585
- (5.) To change sulphate of potash into an equivalent amount of
actual potash, multiply amount of sulphate by..... 54
- (6.) To change actual potash into an equivalent amount of sul-
phate of potash, multiply amount of actual potash by... 1.85

XXIV. TABULATED STATEMENT OF FERTILIZING COMPOSITION AND VALUATION OF VARIOUS PRODUCTS.

For convenience as a present and future reference, it is considered desirable to present a rather full compilation of the analyses of various commercial fertilizing materials and of various farm products, giving their fertilizing constituents and valuation.

There are many other farm products which it would be desirable to present in these tables, but their omission is rendered necessary by reason of the fact that there have yet been made no complete analyses of their fertilizing constituents. This Station purposes in the near future to make such analyses as will fill up many of these gaps. The analyses presented have been compiled from every accessible, reliable source, such as the reports of various experiment stations, standard works upon agriculture, and, especially, Koenig's invaluable compilation.

In making out the following tables, the following prices *in cents per pound* have been fixed in accordance with the trade value of the various ingredients adopted for the year 1891: Nitrogen in ammonia compounds and in urine of animals, eighteen and one-half; nitrogen in nitrates, fourteen and one-half; organic nitrogen in animal matter, as fine ground fish, meat, blood, and solid excre-

ments, fifteen and one-half; organic nitrogen in vegetable matter, fifteen; organic matter in hair, horn, etc., seven and one-half; phosphoric acid, soluble in water, eight; phosphoric acid, "reverted," seven and one-half; phosphoric acid in dry ground fish, fine bone and tankage, seven; phosphoric acid in other forms of organic matter, five and one-half; phosphoric acid, insoluble forms, two; potash, in form of sulphate, in ashes, etc., five and one-half; potash in chlorides, in kainit, in vegetable and animal matter, four and one-half.

1. COMMERCIAL FERTILIZING MATERIALS.

A. Materials containing phosphates.

NAME OF SUBSTANCE.	Moisture.	Nitrogen.	Potash.	PHOSPHORIC ACID.			Valuation per ton of 2,000 pounds.
				Available.	Insoluble.	Total.	
Apatite .....	.....	.....	.....	.....	.....	36.08	\$14.43
Bone ash	7.00	.....	.....	.....	.....	35.80	14.35
Bone black	4.60	.....	.....	.....	.....	29.28	11.31
Bone black (dissolved) .....	.....	.....	.....	16.70	0.30	17.00	26.84
Bone meal	7.47	4.12	.....	8.28	15.22	23.50	42.35
Bone meal (free from fat) .....	.....	6.20	.....	.....	.....	20.10	40.71
Bone meal (from glue factory) .....	.....	1.70	.....	.....	.....	29.90	37.99
Bone meal (dissolved) .....	.....	2.60	.....	13.53	4.07	17.60	33.92
Caribbean guano .....	.....	.....	.....	.....	.....	18.90	7.56
Cuba guano	24.27	1.67	.....	.....	.....	13.35	10.35
Keystone condensed phosphate	1.50	.....	.....	38.81	8.94	47.75	65.67
Mona Island guano	12.52	0.76	.....	7.55	14.33	21.88	20.09
Navassa phosphate	7.60	.....	.....	.....	.....	34.27	13.71
Orchilla guano	7.31	.....	.....	.....	.....	26.77	10.71
Peruvian guano	14.81	7.85	2.61	8.36	6.90	15.26	42.56
South Carolina rock (ground)	1.50	.....	.....	0.60	27.43	28.03	11.93
South Carolina rock (floats) .....	.....	.....	.....	.....	.....	27.20	10.88
South Carolina rock (dissolved) .....	.....	.....	.....	11.60	3.60	15.20	20.00
Thomas Slag (American) .....	.....	.....	.....	.....	.....	21.37	8.55
Thomas Slag (English) .....	.....	.....	.....	6.09	13.31	19.40	15.07
Thomas Slag (German) .....	.....	.....	.....	.....	.....	30.51	12.20

COMMERCIAL FERTILIZING MATERIALS — (Concluded).

B. Materials containing potassium.

NAME OF SUBSTANCE.	Moisture.	Nitrogen.	Potash.	PHOSPHORIC ACID.			Valuation per ton of 2,000 pounds.
				Available.	Insoluble.	Total.	
Carnallite .....	.....	.....	13.68	.....	.....	.....	\$12 31
Cotton-seed hull ashes.....	7.33	.....	23.80	.....	.....	8.50	29 58
Kainite.....	3.20	.....	13.54	.....	.....	.....	12 19
Krugite	4.82	.....	8.42	.....	.....	.....	7 58
Muriate of potash.....	2.00	.....	52.46	.....	.....	.....	47 21
Nitrate of potash.....	1.93	13.09	45.19	.....	.....	.....	87 67
Spent tan-bark ashes.....	6.31	.....	2.04	.....	.....	1.61	2 89
Sulphate of potash (high grade)	1.25	.....	38.60	.....	.....	.....	42 46
Sulphate of potash and magnesia	4.75	.....	23.50	.....	.....	.....	25 85
Sylvinite	7.25	.....	16.65	.....	.....	.....	14 98
Waste from gunpowder works	2.75	2.43	18.00	.....	.....	.....	26 85
Wood ashes (unleached).....	12.00	.....	5.50	.....	.....	1.85	6 79
Wood ashes (leached).....	.....	.....	1.10	.....	.....	1.40	1 77

C. Materials containing nitrogen.

Ammonite.....	5.88	11.33	.....	.....	.....	3.43	38 90
Castor pomace	9.98	5.56	1.12	.....	.....	2.16	20 06
Cotton-seed meal.....	6.80	6.66	1.62	.....	.....	1.45	23 03
Dried blood	12.50	10.52	.....	.....	.....	1.91	34 71
Dried fish	12.75	7.25	0.45	3.05	5.20	8.25	33 48
Horn and hoof waste	10.17	13.25	.....	.....	.....	1.83	43 09
Lobster shells.....	7.27	4.50	.....	.....	.....	3.52	17 82

Meat scrap	12.09	10.44	.....	.....	.....	2.07	34 64
Oleomargarine refuse	8.54	12.12	.....	.....	.....	0.88	38 54
Sulphate of ammonia	1.00	20.50	.....	.....	.....	.....	75 85
Tankage	13.20	6.82	.....	.....	6.23	11.25	36 03
Tobacco stems	10.61	2.29	.....	.....	.....	0.60	13 33
Wool waste	9.27	5.64	.....	.....	.....	0.29	18 41

D. Miscellaneous materials.

Ashes (anthracite coal)	.....	.....	.....	.....	.....	0.10	0 13
Ashes (bituminous coal)	.....	.....	.....	.....	.....	0.40	0 52
Ashes (lime-kiln)	15.45	.....	.....	.....	.....	1.18	1 25
Marls (Massachusetts)	18.18	.....	.....	.....	.....	1.05	0 42
Marls (North Carolina)	1.50	.....	.....	.....	.....	0.56	0 26
Marls (Virginia)	15.98	.....	.....	.....	.....	0.09	0 48
Mud (fresh water)	40.37	1.37	.....	.....	.....	0.26	4 41
Peat	61.50	0.75	.....	.....	.....	.....	2 25
Soot	5.54	.....	.....	.....	.....	.....	2 01
Turf	19.29	1.94	.....	.....	.....	.....	5 82

2. FERTILIZING CONSTITUENTS IN FARM PRODUCTS.

A. Farm manures.

NAME OF SUBSTANCE.	Moisture.	Nitrogen.	Potash.	Phosphoric acid.	Valuation per ton of 2,000 pounds.
Cattle (solid fresh excrement) . . . . .	.....	0.29	0.10	0.17	\$1 18
Cattle (fresh urine) . . . . .	.....	0.58	0.49	.....	2 59
Hen manure (fresh) . . . . .	.....	1.63	0.85	1.54	7 51
Horse (solid fresh excrement) . . . . .	.....	0.44	0.35	0.17	1 87
Horse (fresh urine) . . . . .	.....	1.55	1.50	.....	7 09
Human excrement (solid)	77.20	1.00	0.25	1.09	4 52
Human urine	95.90	0.60	0.20	0.17	2 67
Poudrette (night soil) . . . . .	.....	0.80	0.30	1.40	4 29
Sheep (solid fresh excrement) . . . . .	.....	0.55	0.15	0.31	2 18
Sheep (fresh urine) . . . . .	.....	1.95	2.26	0.01	9 27
Stable manure (mixed)	73.27	0.50	0.60	0.30	2 42
Swine (solid fresh excrement) . . . . .	.....	0.60	0.13	0.41	2 43
Swine (fresh urine) . . . . .	.....	0.43	0.83	0.07	2 45

B. Hay and dry coarse fodders.

Blue melilot	8.22	1.92	2.80	0.54	8 87
Buttercups . . . . .	.....	1.02	0.81	0.41	4 24
Carrot tops (dry)	9.76	3.13	4.88	0.61	14 46
Clover (alsike)	9.93	2.33	2.01	0.70	9 57
Clover (Bokhara)	6.36	1.77	1.67	0.44	7 30
Clover (mammoth red)	11.41	2.23	1.22	0.55	8 39
Clover (medium red)	10.72	2.09	2.20	0.44	8 73
Clover (white) . . . . .	.....	2.75	1.81	0.52	10 45
Corn fodder . . . . .	.....	1.80	0.76	0.51	6 65
Corn stover	28.24	1.12	1.32	0.30	4 88
Cow-pea vines	9.00	1.64	0.91	0.53	6 32
Daisy (white)	9.65	0.28	1.25	0.44	2 45
Daisy (ox eye) . . . . .	.....	0.80	2.23	0.27	4 70
Hungarian grass	7.15	1.16	1.28	0.35	5 02
Italian rye-grass	8.29	1.15	0.99	0.55	4 95
June grass . . . . .	.....	1.05	1.46	0.37	4 87
Lucerne (alfalfa)	6.26	2.07	1.46	0.53	8 11
Meadow fescue	9.79	0.94	2.01	0.34	5 00
Meadow foxtail . . . . .	.....	1.54	2.19	0.44	7 08
Mixed grasses	11.26	1.37	1.54	0.35	5 88
Orchard grass	8.84	1.31	1.88	0.41	6 07
Perennial rye-grass	9.13	1.23	1.55	0.56	5 70
Red-top	7.71	1.15	1.02	0.36	4 76
Rowen	12.48	1.75	1.97	0.46	7 53
Salt hay	5.36	1.18	0.72	0.25	4 46
Serradella	7.39	2.70	0.65	0.78	9 54
Soja bean	6.30	2.32	1.08	0.67	8 67

2. FERTILIZING CONSTITUENTS IN FARM PRODUCTS — (*Continued*).*B. Hay and dry coarse fodders — (Concluded).*

NAME OF SUBSTANCE.	Moisture.	Nitrogen.	Potash.	Phosphoric acid.	Valuation per ton of 2,000 pounds.
Tall meadow oat . . . . .	.....	1.16	1.72	0.32	\$5 38
Timothy hay	7.52	1.26	1.53	0.46	5 66
Vetch and oats	11.98	1.37	0.90	0.53	5 50
Yellow trefoil . . . . .	.....	2.14	0.98	0.43	7 78

C. Green fodders.

Buckwheat	82.60	0.51	0.43	0.11	2 04
Clover (red)	80.00	0.53	0.46	0.13	2 15
Clover (white)	81.00	0.56	0.24	0.20	2 12
Corn fodder	72.64	0.56	0.62	0.28	2 55
Corn fodder (ensilage)	71.60	0.36	0.33	0.14	1 53
Cow-pea vines	78.81	0.27	0.31	0.98	2 17
Horse bean	74.71	0.68	1.37	0.33	3 64
Lucerne (alfalfa)	75.30	0.72	0.45	0.15	2 73
Meadow grass (in flower)	70.00	0.44	0.60	0.15	2 03
Millet	62.58	0.61	0.41	0.19	2 41
Oats (green)	83.36	0.49	0.38	0.13	1 96
Peas	81.50	0.50	0.56	0.18	2 20
Prickley comfrey . . . . .	.....	0.42	0.75	0.11	2 06
Rye grass	70.00	0.57	0.53	0.17	2 37
Serradella	82.59	0.41	0.42	0.14	1 76
Sorghum . . . . .	.....	0.40	0.32	0.08	1 58
Spanish moss	60.80	0.28	0.26	0.30	1 40
Vetch and oats	86.11	0.24	0.79	0.09	1 53
White lupine	85.35	0.44	1.73	0.35	3 26
Young grass	80.00	0.50	1.16	0.22	2 79

D. Straw, chaff, leaves, etc.

Barley chaff	13.08	1.01	0.99	0.27	4 22
Barley straw	13.25	0.72	1.16	0.15	3 37
Bean shells	18.50	1.48	1.38	0.55	6 29
Beech leaves (autumn)	15.00	0.80	0.30	0.24	2 93
Buckwheat straw	16.00	1.30	2.41	0.61	6 74
Cabbage leaves (air-dried)	14.60	0.24	1.71	0.75	3 08
Cabbage stalks (air-dried)	16.80	0.18	3.49	1.06	4 85
Carrots (stalks and leaves)	80.80	0.51	0.37	0.21	2 09
Corn cobs	12.09	0.50	0.60	0.06	2 11
Corn hulls	11.50	0.23	0.24	0.02	0 93
Hops	11.07	2.53	1.99	1.75	11 31
Oak leaves	15.00	0.80	0.15	0.34	2 91
Oat chaff	14.30	0.64	1.04	0.20	3 08
Oat straw	28.70	0.29	0.88	0.11	1 78
Pea shells	16.65	1.36	1.38	0.55	5 93
Pea straw (cut in bloom) . . . . .	.....	2.29	2.32	0.68	9 71
Pea straw (ripe) . . . . .	.....	1.04	1.01	0.35	4 41

FERTILIZING CONSTITUENTS IN FARM PRODUCTS—(Continued).

D. Straw, chaff, leaves, etc. — (Concluded).

NAME OF SUBSTANCE.	Moisture.	Nitrogen.	Potash.	Phosphoric acid.	Valuation per ton of 2,000 pounds.
Potato stalks and leaves.....	77.00	0.49	0.07	0.06	\$1 60
Rye straw	15.40	0.24	0.76	0.19	1 61
Sugar-beet stalks and leaves.	92.65	0.35	0.16	0.07	1 27
Turnip stalks and leaves	89.80	0.30	0.24	0.13	1 33
Wheat chaff (spring).....	14.80	0.91	0.42	0.25	3 38
Wheat chaff (winter).....	10.56	1.01	0.14	0.19	3 37
Wheat straw (spring).....	15.00	0.54	0.44	0.18	2 21
Wheat straw (winter)	10.36	0.82	0.32	0.11	2 87

E. Roots, tubers, etc.

Beets (red)	87.73	0.24	0.44	0.09	1 22
Beets (sugar)	84.65	0.25	0.29	0.08	1 10
Beets (yellow fodder)	90.60	0.19	0.46	0.09	1 08
Carrots	90.02	0.14	0.54	0.10	1 02
Mangolds.....	87.29	0.19	0.38	0.09	1 01
Potatoes.....	79.75	0.21	0.29	0.07	97
Ruta bagas	87.82	0.21	0.50	0.13	1 22
Turnips	87.20	0.22	0.41	0.12	1 16

F. Grains, and other seeds.

Barley	15.42	2.06	0.73	0.95	7 88
Beans .....	.....	4.10	1.20	1.16	14 66
Buckwheat	14 10	1.44	9.21	0.44	4 99
Corn kernels	10.88	1.82	0.40	0.75	6 59
Corn kernels and cobs (cob-meal)	10.00	1.46	0.44	0.60	5 44
Hempseed	12.20	2.62	0.97	1.75	10 66
Linseed	11.80	3.20	1.04	1.30	11 97
Lupines	13.80	5.52	1.14	0.87	18 54
Millet	13.00	2.40	0.47	0.91	8 62
Oats	20.80	1.75	0.41	0.48	6 15
Peas	19.10	4.26	1.23	1.26	15 27
Rye	14.90	1.76	0.54	0.82	6 67
Soja beans.....	18.33	5.30	1.99	1.87	19 75
Sorghum	14.00	1.48	0.42	0.81	5 71
Wheat (spring).....	14.75	2.36	0.61	0.89	8 61
Wheat (winter).	15.40	2.83	0.50	0.68	9 69

G. Flour and meal.

Corn meal	13.52	2.05	0.44	0.71	7 33
Ground barley	13.43	1.55	0.34	0.66	5 68
Hominy feed.....	8.93	1.63	0.49	0.98	7 11
Pea meal	8.85	3.08	0.99	0.82	11 03
Rye flour	14.20	1.68	0.65	0.85	6 56
Wheat flour.....	9.83	2.21	0.54	0.57	7 74

FERTILIZING CONSTITUENTS IN FARM PRODUCTS — (*Continued*).*H. By-products and refuse.*

NAME OF SUBSTANCE	Moisture.	Nitrogen.	Potash.	Phosphoric acid.	Valuation per ton of 2,000 pounds.
Apple pomace	80.50	0.23	0.13	0.02	\$0 83
Cotton hulls	10.63	0.75	1.08	0.18	3 42
Cotton-seed meal.....	.....	6.52	1.89	2.78	24 32
Glucose refuse	8.10	2.62	0.15	0.29	8 31
Gluten meal	8.53	5.43	0.05	0.43	16 81
Hop refuse	8.98	0.98	0.11	0.20	3 26
Linseed cake (new process) ..	6.12	5.40	1.16	1.42	18 81
Linseed cake (old process) ..	7.79	6.02	1.16	1.65	20 92
Malt sprouts.....	10.28	3.67	1.60	1.40	13 99
Oat bran	8.19	2.25	0.66	1.11	8 57
Rye middlings	12.54	1.84	0.81	1.26	7 64
Spent brewer's grains (dry) ..	6.98	3.05	1.55	1.26	11 93
Spent brewer's grains (wet) ..	75.01	0.89	0.05	0.31	3 06
Wheat bran.....	11.01	2.88	1.62	2.87	13 26
Wheat middlings	9.18	2.63	0.63	0.95	9 50

I. Dairy products.

Milk	87.20	0.58	0.17	0.30	2 28
Cream.....	68.80	0.58	0.09	0.15	2 04
Skim-milk	90.20	0.58	0.19	0.34	2 34
Butter	13.60	0.12	.....	.....	0 37
Buttermilk	90.10	0.64	0.09	0.15	2 23
Cheese (from unskimmed milk).....	38.00	4.05	0.29	0.80	13 70
Cheese from half-skimmed milk).....	39.80	4.75	0.29	0.80	15 87
Cheese (from skimmed milk).....	46.00	5.45	0.20	0.80	17 96

J. Flesh of farm animals.

Beef	77.00	3.60	0.52	0.43	11 74
Calf (whole animal)	66.20	2.50	0.24	1.38	9 23
Ox.....	59.70	2.66	0.17	1.86	10 18
Pig	52.80	2.00	0.90	0.44	7 02
Sheep.....	59.10	2.24	0.15	1.23	8 97

K. Garden products.

Asparagus .....	.....	0.32	0.12	0.09	1 17
Cabbage .....	.....	0.30	0.43	0.11	1 41
Cucumbers .....	.....	0.16	0.24	0.12	0 83
Lettuce.....	.....	0.20	0.25	0.11	0 95
Onions .....	.....	0.27	0.25	0.13	1 18

XXV. RESULTS OF ANALYSES OF COMMERCIAL FERTILIZERS

Composition of fertilizers as guaranteed by manufacturers, and

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
Allentown Manufacturing Co., Allentown, Pa.	Lehigh phosphate.	Attica.	618
Armour & Co., Chicago, Ill.	Dried blood.	Syracuse.	36
H. J. Baker & Bro., New York city.	AA. Ammoniated super-phosphate.	Newburgh.	430
Bowker Fertilizer Co., Boston and New York.	Ammoniated dissolved bone phosphate.	Livonia Station. East Avon. Delhi.	313 318 411
Bowker Fertilizer Co., Boston and New York.	Hill and drill.	Canandaigua. East Avon. Delhi.	167 317 412
Bowker Fertilizer Co., Boston and New York.	Stockbridge for roots.	Syracuse.	10
Bowker Fertilizer Co., Boston and New York.	Stockbridge for vines.	Syracuse.	11
Bowker Fertilizer Co., Boston and New York.	Super-phosphate	Syracuse.	1 9 26
Bowker Fertilizer Co., Boston and New York.	Super-phosphate with potash.	Alfred Center. Cuba.	577 637
Bowker Fertilizer Co., Boston and New York.	Sure crop.	Canandaigua. Livonia Station. Geneseo.	168 314 344
Bradley Fertilizer Co., Boston, Mass.	Alkaline bone.	Seneca Castle.	173
Bradley Fertilizer Co., Boston, Mass.	Ammoniated dissolved bones	Canandaigua. Victor. Lima. Mt. Morris.	261 169 303 334
Bradley Fertilizer Co., Boston, Mass.	Circle extra fine ground bone with potash.	Hamden.	416
Bradley Fertilizer Co., Boston, Mass.	Dissolved bone.	Blood's Depot.	554

IN NEW YORK STATE FOR THE FALL OF 1890.

as found by chemical analysis — estimated in parts per hundred.

	NITROGEN.		PHOSPHORIC ACID.			Potash, soluble in water. De- termined as potash.
	Deter- mined as nitrogen.	Equivalent to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	0.83 1.35	1.00 1.63	7 to 8 7.00	1 to 2 3.25	8 to 10 10.25	2 to 2.50 2.62
Guaranteed Found.	12.76 13.08	15.50 15.88	..........	..........	..........	..........
Guaranteed Found.	2.50 to 3.30 3.35	3 to 4 4.06	10 to 12 13.17	1 to 3 0.25	11 to 13 13.42	2 to 3 4.46
Guaranteed Found.	1.65 to 2.50 2.10	2 to 3 2.54	8 to 10 9.85	2 1.85	10 to 12 11.70	1 to 2 2.47
Guaranteed Found.	2 to 2.90 2.22	2.50 to 3.50 2.70	8 to 10 9.49	2 2.43	10 to 12 11.52	2 to 3 2.66
Guaranteed Found.	2.5 to 3.30 2.66	3 to 4 3.22	9 to 11 9.59	..... 1.54	..... 11.13	2 to 4 3.92
Guaranteed Found.	3.30 to 4.10 3.16	4 to 5 3.84	7 to 8 9.66	1 to 2 1.85	8 to 10 11.51	5 to 6 5.26
Guaranteed Found.	..... .....	..... .....	10 to 12 10.31	2 1.58	12 to 14 11.89	1 to 2 2.71
Guaranteed Found.	..... .....	..... .....	10 to 12 12.05	2 2.96	12 to 14 15.01	1 to 2 1.22
Guaranteed Found.	0.83 to 1.65 1.05	1 to 2 1.30	8 to 10 8.78	2 2.74	10 to 12 11.52	1 to 2 1.45
Guaranteed Found.	..... .....	..... .....	11 to 15 10.54	1 to 2 1.99	12 to 16 12.53	2.40 to 3.50 2.52
Guaranteed Found.	1.65 to 2.50 2.03	2 to 3 2.46	7 to 9 9.90	1 to 2 1.55	8 to 10 11.45	1 to 2 1.81
Guaranteed Found.	1.85 to 2.70 2.19	2.25 to 3.25 2.66	8 to 12 8.99	1 to 2 1.50	10 to 13 10.49	2 to 3 3.41
Guaranteed Found.	..... .....	..... .....	12 to 15 14.75	1 to 2 1.05	13 to 16 15.70	..........

XXV. RESULTS OF ANALYSES OF COMMERCIAL

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
Bradley Fertilizer Co., Boston, Mass.	Dissolved bone with potash.	Penn Yan.	273
Bradley Fertilizer Co., Boston, Mass.	Eureka super-phosphate.	Avon.	319
Bradley Fertilizer Co., Boston, Mass.	Farmer's new method.	Canandaigua.	171
Bradley Fertilizer Co., Boston, Mass.	Fine ground bone.	Attica.	620
Bradley Fertilizer Co., Boston, Mass.	Niagara phosphate.	Lima.	302
Bradley Fertilizer Co., Boston, Mass.	Bradley's patent super-phosphate.	Milo Center. Victor. Moscow.	284 260 331
Bradley Fertilizer Co., Boston, Mass.	Potato fertilizer.	Delhi.	407
Bradley Fertilizer Co., Boston, Mass.	Bradley's sea fowl guano.	Canandaigua.	170
Chemical Co. of Canton, Baltimore, Md.	Dissolved bone phosphate.	Lyons. Weedsport.	45 67
Chesapeake Guano Co., Baltimore, Md.	Ortola alkaline bone.	Lima.	304
Cleveland Dryer Co., Cleveland, Ohio.	Ohio seed maker	York.	330
Cleveland Dryer Co., Cleveland, Ohio.	Square bone.	Hamburgh.	674
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.	Acidulated bone black.	Buffalo.	657
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.	Ammoniated bone super-phosphate.	Arcade. Hornellsville. Springville.	632 574 653
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.	Ammoniated bone super-phosphate.	Hart Lot.	53

FERTILIZERS, ETC.—(Continued).

	NITROGEN.		PHOSPHORIC ACID.			Potash, soluble in water. De- termined as potash.
	Deter- mined as nitrogen.	Equivalent to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	0.83 to 1.65 1.18	1 to 2 1.44	8 to 10 9.22	1 to 2 1.74	10 to 12 10.96	4 to 6 4.07
Guaranteed Found.	..... .....	..... .....	9 to 12 11.33	..... 0.85	..... 12.18	3.20 to 4.30 2.99
Guaranteed Found.	0.83 to 1.65 1.50	1 to 2 1.82	8 to 10 9.19	1 to 2 0.83	11 to 12 10.02	2.15 to 3.25 2.43
Guaranteed Found.	2.50 to 3.25 3.49	3 to 4 4.23	..... 7.30	..... 15.68	21 to 23 22.98	..........
Guaranteed Found.	1 to 2 1.37	1.20 to 2.40 1.66	7 to 9 9.10	1 to 2 1.73	8 to 10 10.83	1 to 1.60 1.30
Guaranteed Found.	2.05 to 2.90 1.93	2.50 to 3.50 2.34	8 to 10 10.17	1 to 2 1.46	10 to 12 11.63	1.50 to 2.50 2.20
Guaranteed Found.	2.05 to 2.90 2.15	2.50 to 3.50 2.61	9 to 10 9.29	1 to 2 0.73	11 to 12 10.02	3.20 to 4.30 3.45
Guaranteed Found.	2.05 to 2.85 1.89	2.5 to 3.5 2.29	8 to 10 10.41	1 to 2 1.81	10 to 12 12.22	1.5 to 2.5 2.53
Guaranteed Found.	..... .....	..... .....	12 to 14 11.65	2 to 4 2.17	14 to 18 13.82	..........
Guaranteed Found.	..... .....	..... .....	10 to 11 10.14	..... 0.53	..... 10.67	3 to 4 3.65
Guaranteed Found.	1.25 to 2.05 1.10	1.5 to 2.5 1.34	10 to 12 11.62	3 to 5 2.53	15 to 17 14.15	..........
Guaranteed Found.	2.50 to 3.25 2.74	3 to 4 3.33	8 to 10 9.27	..... 2.45	..... 11.72	..........
Guaranteed Found.	..... .....	..... .....	16 to 18 17.47	..... 0.76	..... 18.23	..........
Guaranteed Found.	2.90 to 3.70 2.83	3.50 to 4.50 3.44	8 to 12 8.63	1 to 2 3.51	10 to 12 12.14	1 to 2 1.71
Guaranteed Found.	2.90 to 3.70 2.91	3.5 to 4.5 3.53	8 to 12 9.70	1 to 2 1.14	10 to 12 10.84	1.10 to 1.60 2.19

XXV. RESULTS OF ANALYSES OF COMMERCIAL

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.	Dissolved bone black.	Hopewell.	175
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.	Newrival ammoniated superphosphate.	Blood's Depot.	556
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.	Potato, hop and tobacco phosphate.	Alfred Center. Castile. Buffalo.	580 605 656
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.	Queen city phosphate.	Corning.	570
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.	Queen city phosphate.	Delhi.	409
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.	Wheat and corn phosphate.	Buffalo.	655
Davidge Fertilizing Co., New York city.	Wheat and corn compound.	Blood's Depot.	558
E. Frank Coe, New York city.	Alkaline bone.	Wyoming.	600
E. Frank Coe., New York city.	Alkaline bone.	Caledonia.	327
E. Frank Coe, New York city.	Ammoniated bone superphosphate.	Wyoming.	601
E. Frank Coe, New York city.	Gold brand excelsior guano.	Orient, L. I.	507
E. Frank Coe, New York city.	Muriate of potash.	Orient, L. I.	508
E. Frank Coe, New York city.	Red brand excelsior guano.	Orient, L. I.	506
E. Frank Coe, New York city.	XXV ammoniated bone super phosphate.	Benton Center.	252
Ellsworth, Tuttle & Co., Promised Land, L. I.	Ground fish scrap.	Promised Land.	510

FERTILIZERS, ETC.—(Continued).

	NITROGEN.		PHOSPHORIC ACID.			Potash, soluble in water. De- termined as potash.
	Deter- mined as nitrogen.	Equivalent to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	..... .....	..... .....	15 to 18 16.72	..........	..........	..........
Guaranteed Found.	1.25 to 2.05 1.39	1.50 to 2.50 1.68	10 to 12 10.77	1 to 3 1.26	11 to 13 11.03	1.60 to 2.70 3.01
Guaranteed Found.	2.05 to 2.90 2.37	2.50 to 3.50 2.88	10 to 12 9.53	1 to 2 1.27	..... 10.78	3.50 to 4.50 4.63
Guaranteed Found.	1.65 to 2.05 1.86	2 to 2.50 2.25	8 to 12 9.48	1 to 2 0.87	..... 10.35	1.10 to 2.15 2.61
Guaranteed Found.	1.65 to 2.05 1.78	2 to 2.50 2.16	8 to 12 8.54	1 to 2 1.45	9 to 12 9.99	1.08 to 2.16 2.21
Guaranteed Found.	2.05 to 2.90 2.44	2.50 to 3.50 2.96	10 to 13 12.50	1 to 2 3.75	..... 16.30	1.60 to 2.70 2.67
Guaranteed Found.	0.83 to 1.65 1.15	1 to 2 1.39	7 to 9 7.65	1 to 3 2.52	8 to 12 10.17	1 to 2 2.14
Guaranteed Found.	0.83 to 1.65 1.43	1 to 2 1.73	9 to 12 11.03	2 to 3 1.86	..... 12.89	1.60 to 2.15 2.45
Guaranteed Found.	1 to 1.50 1.09	1.20 to 1.80 1.32	9 to 12 10.94	2 to 3 1.34	11 to 14 12.28	1.60 to 2.15 1.94
Guaranteed Found.	1.75 to 2.00 1.92	2 to 2.50 2.33	8 to 10 10.50	..... 2.47	..... 12.97	1.10 to 1.60 1.84
Guaranteed Found.	2.50 to 3.25 3.20	3 to 4 3.88	8 to 10 8.57	1 to 2 1.25	8 to 11 9.82	6 to 8 5.59
Guaranteed Found.	..... .....	..... .....	..... .....	..... .....	..... .....	52.44 54.03
Guaranteed Found.	3.30 to 4.10 4.13	4 to 5 5.02	7 to 9 9.27	1 to 2 0.52	10 to 12 9.79	6 to 7 5.65
Guaranteed Found.	0.83 to 1.23 0.70	1 to 1.05 0.85	7 to 9 11.17	2 to 3 1.91	10 to 12 12.08	1.50 to 2.25 1.60
Guaranteed Found.	8.23 9.59	10 11.63	..... 5.12	..... 0.42	6 5.54	..........

XXV. RESULTS OF ANALYSES OF COMMERCIAL

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number
Ellsworth, Tuttle & Co., Promised Land, L. I.	No. 1.	Promised Land.	511
Farmers' Fertilizer Co., Syracuse, N. Y.	Empire guano.	De Witt.	41
Farmers' Fertilizer Co., Syracuse, N. Y.	Onondaga chief.	Attica. Perry Center.	626 610
Farmers' Fertilizer Co., Syracuse, N. Y.	Reaper brand.	De Witt.	37
Farmers' Fertilizer Co., Syracuse, N. Y.	Standard ammoniated bone phosphate.	Attica. Perry Center.	627 609
Farmers' Fertilizer Co., Syracuse, N. Y.	Standard ammoniated bone phosphate.	Shortsville. Penn Yan. N. Bloomfield.	163 274 301
Farmers' Fertilizer Co., Syracuse, N. Y.	Standard ammoniated bone phosphate, special formula.	De Witt.	40
Great Eastern Fertilizer Co., New York city.	Universal plant food.	Caledonia.	325
Great Eastern Fertilizer Co., New York city.	Wheat special.	Caledonia.	326
Listers' Ag'l Chemical Works, Newark, N. J.	Ammoniated dissolved bone.	Stanley.	188
Listers' Ag'l Chemical Works, Newark, N. J.	Ammoniated dissolved bone.	Newburgh.	433
Listers' Ag'l Chemical Works, Newark, N. J.	Bone flour.	Elmira.	203
Listers' Ag'l Chemical Works, Newark, N. J.	Dissolved bone-black.	Weedsport. E. Bloomfield.	48, 70 255
Listers' Ag'l Chemical Works, Newark, N. J.	Dried blood.	Weedsport.	47, 73
Listers' Ag'l Chemical Works, Newark, N. J.	German potash salts.	Weedsport.	46, 69

XXV. RESULTS OF ANALYSES OF COMMERCIAL

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
Listers' Ag'l Chemical Works, Newark, N. J.	Lawn fertilizer.	Elmira.	204
Listers' Ag'l Chemical Works, Newark, N. J.	Perfect fertilizer.	Geneseo.	349
Listers' Ag'l Chemical Works, Newark, N. J.	Standard super-phosphate of lime.	E. Bloomfield. Penn Yan. Geneseo.	254 290 348
Listers' Ag'l Chemical Works, Newark, N. J.	Success.	Penn Yan. Dundee. East Avon. Caledonia.	281 285 315 324
Frederick Ludlam, New York city.	Cereal brand.	Wyoming.	597
Frederick Ludlam, New York city.	Sickle brand.	Wyoming.	598
Mapes Formula and Peruvian Guano Co., New York city.	Cabbage and cauliflower manure.	Port Jervis.	426
Mapes Formula and Peruvian Guano Co., New York city.	Complete manure—brand A.	Port Jervis.	424
Mapes Formula and Peruvian Guano Co., New York city.	Corn manure.	Port Jervis.	425
Mapes Formula and Peruvian Guano Co., New York city.	Fruit and vine manure.	Newburgh.	434
Mapes Formula and Peruvian Guano Co., New York city.	Potato manure.	Port Jervis.	423
Maryland Fertilizer and Manufacturing Co., Baltimore, Md.	Alkaline bone.	Lima. Mount Morris.	335 305
Maryland Fertilizer and Manufacturing Co., Baltimore, Md.	Linden super-phosphate.	Mount Morris.	336
C. Meyer, Jr., Maspeth, L. I.	Acme potato fertilizer.	Aquebogue, L. I.	501
C. Meyer, Jr., Maspeth, L. I.	Superior super-phosphate.	Stanley.	18

FERTILIZERS, ETC.—(Continued).

	NITROGEN.		PHOSPHORIC ACID.			Potash soluble in water. De- termined as potash.
	Deter- mined as nitrogen.	Equivalent to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	1.65 to 2.50 2.13	2 to 3 2.58	7 to 8 8.26	..... 0.11	..... 8.37	3.50 to 4 4.50
Guaranteed Found.	1 to 1.65 2.19	1.20 to 2 2.66	10.50 to 12 10.82	..... 0.60	..... 11.42	1.50 to 2.50 2.59
Guaranteed Found.	2.35 to 2.70 2.77	2.85 to 3.25 3.36	10 to 12 9.52	2 to 3 0.45	12 to 15 9.97	1.50 to 2 2.53
Guaranteed Found.	1.00 to 1.65 1.73	1.25 to 2.00 2.09	10.50 to 12 9.53	..... 0.55	..... 10.08	1.60 to 2 2.47
Guaranteed Found.	1.23 to 1.65 1.38	1.05 to 2 1.67	10 to 12 9.57	1 to 3 1.60	10 to 14 11.06	2.15 to 3.25 2.63
Guaranteed Found.	..... .....	..... .....	11 to 15 10.94	1 to 3 3.08	12 to 18 14.02	3 to 4 2.65
Guaranteed Found.	4.50 to 5.35 4.61	5.50 to 6.50 5.59	6 8.55	..... 1.18	6 to 8 9.73	8 to 10 12.20
Guaranteed Found	2.50 to 3.30 2.68	3 to 4 3.24	10 to 12 12.79	2 to 4 1.95	..... 14.74	2.50 to 3.50 3.06
Guaranteed Found.	3.70 to 4.50 3.95	4.50 to 5.50 4.79	8 to 10 10.67	2 1.37	10 to 12 12.04	6 to 7 8.13
Guaranteed Found.	1.65 to 2.50 2.51	2 to 3 3.04	7 to 9 9.42	..... 0.30	..... 9.72	11 to 12 14.70
Guaranteed Found.	3.70 to 4.10 4.01	4.50 to 5 4.86	8 to 10 9.14	..... 1.42	..... 10.56	6 to 8 9.06
Guaranteed Found.	..... .....	..... .....	10 to 15 10.96	..... 0.50	..... 11.46	3 to 4 3.11
Guaranteed Found.	..... .....	..... .....	10 to 13 10.12	1 to 2 0.54	11 to 14 10.66	2 to 4 3.09
Guaranteed Found	2.90 to 3.30 3.14	3.50 to 4 3.81	6 to 7 7.93	..... 1.21	7 to 8 9.14	8 to 10 8.28
Guaranteed Found	1.25 to 1.65 1.92	1.5 to 2 2.33	..... 11.27	..... .....	8 to 9 11.98	4 to 5 5.62

XXV. RESULTS OF ANALYSES OF COMMERCIAL

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
Michigan Carbon Works, Detroit, Mich.	Homestead super-phosphate.	Penn Yan.	282
Michigan Carbon Works, Detroit, Mich.	Homestead tobaccogrower.	Livonia Station.	307
Michigan Carbon Works, Detroit, Mich.	Jarves drill phosphate.	Castile.	611
H. S. Miller & Co., Newark, N. J.	Ammoniated dissolved bone.	Hopewell.	176
H. S. Miller & Co., Newark, N. J.	Ammoniated dissolved bone.	Arcade.	631
H. S. Miller & Co., Newark, N. J.	Bone and potash.	Penn Yan. Geneseo.	270 345
H. S. Miller & Co., Newark, N. J.	Ground bone.	Elmira. Arcade.	201 630
H. S. Miller & Co., Newark, N. J.	Harvest Queen.	Halls Corners. Penn Yan. Geneseo.	197 268 346
H. S. Miller & Co., Newark, N. J.	Standard super-phosphate of lime.	Halls Corners. Penn Yan.	196 269
Milsom Rendering and Fertilizer Co., East Buffalo, N. Y.	Buffalo guano.	Rushville.	183
Milsom Rendering and Fertilizer Co., East Buffalo, N. Y.	Dissolved bone and potash.	Castile.	613
Milsom Rendering and Fertilizer Co., East Buffalo, N. Y.	Erie king.	Angelica. Alfred Center.	591 575
Milsom Rendering and Fertilizer Co., East Buffalo, N. Y.	Erie king.	Geneseo.	343
Milsom Rendering and Fertilizer Co., East Buffalo, N. Y.	Pure dissolved bone.	Angelica.	589
Milsom Rendering and Fertilizer Co., East Buffalo, N. Y.	Wheat phosphate.	Phelps.	154

FERTILIZERS, ETC. — (Continued).

	NITROGEN.		PHOSPHORIC ACID.			Potash soluble in water. De- termined as potash.
	Deter- mined as nitrogen.	Equivalent to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	1.85 to 2.60 1.94	2.25 to 3.15 2.36	8 to 11 8.54	..... 0.37	..... 8.91	1.50 to 2 1.77
Guaranteed Found.	3 to 4 3.08	3.60 to 4.80 3.70	10 to 11 12.05	..... 0.85	..... 12.90	3.50 to 4.00 3.24
Guaranteed Found.	1.00 to 1.65 1.32	1.25 to 2 1.60	8 to 9 9.93	2 to 3 1.40	10 to 12 11.34	0.27 to 0.54 1.54
Guaranteed Found.	1.85 to 2.05 1.78	2.25 to 2.5 2.16	9 to 10 8.88	1.5 to 2.5 1.38	10 to 12 10.26	2.5 to 3 3.42
Guaranteed Found.	1.60 to 2 2.17	2 to 2.50 2.64	8 to 10 9.31	0.50 to 2.50 0.86	..... 10.17	1.50 to 2 2.83
Guaranteed Found.	..... .....	..... .....	10 to 12 10.32	..... 0.44	..... 10.76	2.50 2.31
Guaranteed Found.	2.50 2.82	3 to 3.10 3.41	..... .....	..... .....	20 to 25 21.45	..........
Guaranteed Found.	1.00 to 1.65 1.54	1.25 to 2 1.87	10 to 12 9.97	..... 0.90	..... 10.87	1.50 to 2 3.44
Guaranteed Found.	2.35 to 2.70 2.52	2.85 to 3.25 3.05	10 to 12 10.17	1.50 to 2.50 1.02	11.50 to 14.50 11.19	1.50 to 2 3.13
Guaranteed Found.	1.65 to 2.50 1.84	2 to 3 2.23	7 to 11 8.22	3 to 4 1.76	10 to 15 9.98	1 to 2 1.37
Guaranteed Found.	..... .....	..... .....	8 to 11 9.02	3 to 5 1.79	11 to 16 10.81	1.65 to 1.75 2.20
Guaranteed Found.	0.83 to 1.65 1.22	1 to 2 1.43	8.45 to 10.45 9.07	4 to 5 1.26	12.45 to 15.45 10.33	1.90 to 2.10 2.74
Guaranteed Found.	0.83 to 1.65 1.84	1 to 2 2.24	8.45 to 10.45 9.80	4 to 5 2.90	12.45 to 15.45 12.70	1.90 to 2.10 1.40
Guaranteed Found.	..... .....	..... .....	11 to 13 10.88	1.37 to 2.37 1.33	12.37 to 15.37 12.21	..........
Guaranteed Found.	1.65 to 3.30 1.74	2 to 4 2.11	8 to 10 7.79	2 to 3 2.43	10 to 13 10.21	2 to 3 3.67

XXV. RESULTS OF ANALYSES OF COMMERCIAL

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
Northwestern Fertilizer Co., Chicago, Ill.	Horseshoe brand pure ground bone.	Collins.	662
Northwestern Fertilizer Co., Chicago, Ill.	Challenge corn grower.	Collins.	663
Pacific Guano Co., Boston, Mass.	Soluble Pacific guano.	Stanley. Durhamville. Seneca Castle.	172 185 288
Quinnipiac Co., New London, Conn.	Ammoniated dissolved bone.	Milo. Milo Center. N. Bloomfield. Livonia Station	283 251 264 309
Quinnipiac Co., New London, Conn.	Climax phosphate.	N. Bloomfield.	265
Read Fertilizer Co., New York city.	Empire State.	Sennett. Syracuse. Orleans. Stanley.	51 25 174 182
Read Fertilizer Co., New York city.	Farmer's friend.	Syracuse. Lima.	42 306
Read Fertilizer Co., New York city.	Lion brand.	Syracuse. Sennett. E. Bloomfield.	31 52 256
John S. Reese & Co., Baltimore, Md.	Tobacco & cabbage manure.	Mattituck, L. I.	505
Rochester Fertilizer Co., Rochester, N. Y.	Rochester bone and blood guano.	Penn Yan. Livonia Center. Moscow.	279 312 337
Sheldon Bros., Weedsport, N. Y.	Sheldon's compound.	Weedsport.	55-72
Standard Fertilizer Co., Boston, Mass.	Standard guano.	Avon.	316
H. Steppenback, Utica, N. Y.	Home trade.	Utica.	296
W. D. Stewart & Co., New York city.	A No. 1.	Durhamville.	290

FERTILIZERS, ETC. — (Continued).

	NITROGEN.		PHOSPHORIC ACID.			Potash soluble in water. De- termined as potash.
	Deter- mined as nitrogen.	Equivalent to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	2.05 to 2.90 2.92	2.50 to 3.50 3.54	..... 13.83	..... 4.84	22 to 24 18.67	..........
Guaranteed Found.	1.65 to 2.50 2.38	2 to 3 2.88	8 to 9 10.46	2 to 3 4.29	10 to 12 14.75	0.54 to 1.08 1.53
Guaranteed Found.	2.05 to 2.85 2.36	2.50 to 3.50 2.87	8 to 10 10.16	2 to 4 1.30	11 to 14 11.46	1.50 to 2.50 2.68
Guaranteed Found.	1.65 to 2.50 1.96	2 to 3 2.38	9 to 12 10.08	..... 1.43	11 to 14 11.51	2.15 to 3.25 2.76
Guaranteed Found.	0.83 to 1.65 1.37	1 to 2 1.67	9 to 10 10.43	1 to 2 0.95	11 to 12 11.38	2.16 to 2.70 2.95
Guaranteed Found.	1.25 to 2 1.56	1.50 to 2.50 1.90	9 to 11 9.11	2 to 3 2.48	11 to 13 11.59	2.15 to 3.25 2.35
Guaranteed Found.	2 to 2.90 1.97	2.50 to 3.50 2.40	9 to 11 9.10	2 to 4 2.08	11 to 14 11.08	2.15 to 3.25 2.24
Guaranteed Found.	0.83 to 1.65 1.33	1 to 2 1.60	8 to 10 8.34	2 to 3 1.54	10 to 12 9.88	4.30 to 5.40 4.79
Guaranteed Found.	4.10 to 4.95 4.08	5 to 6 4.95	..... 7.46	..... 2.61	6 to 10 10.07	5 to 6 5.50
Guaranteed Found.	0.20 to 0.40 0.83	0.25 to 0.50 1.00	8 to 10 8.09	1 to 2 0.47	9 to 10 8.56	1.50 to 2.50 2.15
Guaranteed Found.	0.60 to 1.20 0.72	0.75 to 1.50 0.88	5 to 7 5.18	2 to 3 0.31	7 to 9 5.49	2 to 3 3.31
Guaranteed Found.	1 to 2 1.12	1.5 to 3 1.36	8 to 12 7.86	2 to 3 3.82	10 to 15 11.68	2.16 to 3.20 2.19
Guaranteed Found.	2.50 to 3.30 3.27	3 to 4 3.96	8 to 12 8.55	1 to 2 0.18	..... 8.73	2 to 3 2.55
Guaranteed Found.	1.25 to 2 1.32	1.50 to 2.40 1.60	7 to 9 8.25	2 to 3 1.81	9 to 11 10.06	1.50 to 2.50 1.56

XXV. RESULTS OF ANALYSES OF COMMERCIAL

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
W. D. Stewart & Co., Boston, Mass.	Nobsque guano.	Stanley.	186
W. D. Stewart & Co., Boston, Mass.	Pacific soluble bone.	Nunda.	596
F. C. Sturdevant, Hartford, Conn.	Granulated tobacco and sulphur.	Middletown.	428
Geo. F. Tuthill, Greenpoint, L. I.	Fish scrap.	Greenport.	509
Walker Fertilizer Co., Phelps Junction, N. Y.	Ammoniated phosphate.	Rushville.	187
Williams & Clark Fertilizer Co., New York city.	Prolific crop producer.	Cuba.	638
Williams & Clark Fertilizer Co., New York city.	Royal bone phosphate.	York.	329
Williams & Clark Fertilizer Co., New York city.	Royal bone phosphate.	Cuba.	636
Zell Guano Co., Baltimore, Md.	Calvert guano.	Wayland. Alfred Center. Cuba.	551 581 635
Zell Guano Co., Baltimore, Md.	Dissolved bone phosphate.	Alfred Center.	579
Zell Guano Co., Baltimore, Md.	Zell's economizer.	Cheshire. Stanley.	165 190

FERTILIZERS, ETC. — (Concluded).

	NITROGEN.		PHOSPHORIC ACID.			Potash, soluble in water. De- termined as potash.
	Deter- mined as nitrogen.	Equivalen- to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	1.15 to 1.65 1.10	1.4 to 2 1.33	9 to 12 9.36	..... 0.44	..... 10.80	2 to 3 2.86
Guaranteed Found.	..... .....	..... .....	12 to 15 13.91	..........	..........	..........
Guaranteed Found.	1.95 2.27	2.35 2.74	..... .....	..... .....	0.75 0.95	7.66 9.42
Guaranteed Found.	8.23 9.48	10.00 11.50	..... 6.17	..... 0.49	6.00 6.66	..........
Guaranteed Found.	1.65 to 2.50 1.78	2 to 3 2.17	7 to 9 7.73	..... 2.94	..... 10.67	1 to 2 1.91
Guaranteed Found.	0.83 to 1.65 1.97	1 to 2 2.37	5 to 6 6.62	1 to 2 1.72	6 to 8 8.34	1 to 2 2.42
Guaranteed Found.	0.83 to 1.65 1.52	1 to 2 1.84	7 to 9 8.32	1 to 2 1.80	8 to 10 10.12	2 to 3 2.90
Guaranteed Found.	0.83 to 1.65 1.70	1 to 2 2.05	7 to 9 8	1 to 2 2.11	8 to 11 10.11	2 to 3 3.06
Guaranteed Found.	0.63 to 1.25 0.85	0.75 to 1.50 1.03	9 to 11 10.47	3 to 5 1.84	11 to 15 12.31	1.50 to 2.50 2.32
Guaranteed Found.	..... .....	..... .....	13 to 16 13.54	2 to 3 0.47	15 to 18 14.01	..........
Guaranteed Found.	0.83 to 1.65 1.05	1 to 2 1.23	9 to 11 10.86	2 to 3 1.28	11 to 14 12.14	1 to 2 2.10

XXVI. RESULTS OF ANALYSES OF COMMERCIAL FERTILIZERS

Composition of fertilizers as guaranteed by manufacturers, and

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
H. J. Baker & Bro., 215 Pearl street, New York city.	AA ammoniated super-phosphate.	Queens, L. I.	119
H. J. Baker & Bro., 215 Pearl street, New York city.	Complete potato manure.	Flatbush, L. I. Queens, L. I. Canarsie, L. I.	77 91 120
Bowker Fertilizer Co., Boston and New York.	Alkaline bone.	York.	446
Bowker Fertilizer Co., Boston and New York.	Ammoniated bone phosphate.	Rochester.	236
Bowker Fertilizer Co., Boston and New York.	Carpenter's special fertilizer for cabbage.	Jamaica, L. I.	107
Bowker Fertilizer Co., Boston and New York.	Carpenter's special fertilizer for potatoes.	Jamaica, L. I.	106
Bowker Fertilizer Co., Boston and New York.	G. & T. high-grade potato manure.	Riverhead, L. I.	514
Bowker Fertilizer Co., Boston and New York.	Hill and drill phosphate.	Rochester. Ilion.	235 145
Bowker Fertilizer Co., Boston and New York.	Stockbridge potato manure.	Southold, L. I.	518
Bowker Fertilizer Co., Boston and New York.	Stockbridge special complete manure for potatoes & vegetables.	Ilion. Rochester.	141 237
Bowker Fertilizer Co., Boston and New York.	Stockbridge special complete manure for strawberries.	Ilion.	142
Bowker Fertilizer Co., Boston and New York.	Stockbridge special complete manure for corn.	Ilion.	143

IN NEW YORK STATE FOR THE SPRING OF 1891.

as found by chemical analysis—estimated in parts per hundred.

	NITROGEN.		PHOSPHORIC ACID.			Potash soluble in water. De- termined as potash,
	Deter- mined as nitrogen.	Equivalent to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	2.5 to 3.3 3.49	3 to 4 4.24	10 to 12 13.21	1 to 3 0.43	11 to 15 13.64	2 to 3 2.92
Guaranteed Found.	3.3 4.22	4 5.13	5.75 8.06	..... 0.32	..... 8.38	10 11.33
Guaranteed Found.	..... .....	..... .....	11 to 13 10.56	1 to 2 2.16	12 to 15 12.72	1 to 2 1.15
Guaranteed Found.	1.65 to 2.5 2.36	2 to 3 2.86	8 to 10 8.59	..... 2.19	10 to 12 10.78	2 to 3 2.93
Guaranteed Found.	4.5 to 5.35 4.47	5.5 to 6.5 5.42	5 to 7 7.35	..... 1.69	..... 9.04	6.5 to 7.5 7.27
Guaranteed Found.	3.3 to 4.5 3.20	4 to 5.5 3.89	7 to 9 7.54	..... 1.85	..... 9.39	6.5 to 7.5 9.42
Guaranteed Found.	3.3 to 4.1 4.26	4 to 5 5.16	7 to 9 6.75	..... 2.36	..... 9.11	7 to 9 7.06
Guaranteed Found.	2.05 to 2.90 2.00	2.5 to 3.5 2.43	8 to 10 8.51	..... 3.37	..... 11.88	2 to 3 2.61
Guaranteed Found.	3.3 to 4.1 3.72	4 to 5 4.52	7 to 9 7.45	..... 3.12	..... 10.57	7 to 9 6.79
Guaranteed Found.	3.3 to 4.1 3.85	4 to 5 4.67	7 to 8 7.75	1 to 2 2.35	8 to 10 10.10	5 to 6 6.36
Guaranteed Found.	2.5 to 3.3 3.39	3 to 4 4.10	6 to 7 9.93	1 to 2 3.03	7 to 9 12.96	4.3 to 5.4 4.32
Guaranteed Found.	3.3 to 4.1 3.40	4 to 5 4.11	8 to 9 10.33	1 to 2 2.96	9 to 10 13.29	4.4 to 5.65 4.24

XXVI. RESULTS OF ANALYSES OF COMMERCIAL

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
Bowker Fertilizer Co., Boston and New York.	Sure crop bone phosphate.	Rochester. Spencerport.	234 379
Bradley Fertilizer Co., Boston, Mass.	Ammoniated dissolved bone.	Brockport.	372
Bradley Fertilizer Co., Boston, Mass.	Complete manure for corn and grain.	Geneva.	388
Bradley Fertilizer Co., Boston, Mass.	Complete manure for potatoes and vegetables.	Gravesend, L. I. Jamaica, L. I. Flatlands, L. I.	90 133 78
Bradley Fertilizer Co., Boston, Mass.	Farmer's new method.	Rome. Rochester. Brockport. Spencerport.	207 229 368 380
Bradley Fertilizer Co., Boston, Mass.	Patent super-phosphate.	Rome. Waterloo. Rochester. Brockport.	206 210 231 371
Bradley Fertilizer Co., Boston, Mass.	Potato fertilizer.	Rome. Waterloo. Rochester. Brockport.	208 211 232 373
Bradley Fertilizer Co., Boston, Mass.	Sea fowl guano.	Rochester.	228
Bradley Fertilizer Co., Boston, Mass.	Vegetable fertilizer.	Rochester.	230
E. B. Chapin, Rochester, N. Y.	Standard phosphate.	Rochester.	298
Chemical Company of Canton, Baltimore, Md.	Special potato fertilizer.	Mattituck, L. I.	530
E. Frank Coe, 16 Burling Slip, New York city.	Blue brand excelsior guano.	Jamaica, L. I.	126
E. Frank Coe, 16 Burling Slip, New York city.	Excelsior guano.	Jaimaca, L. I.	127
E. Frank Coe, 16 Burling Slip, New York city.	Gold brand excelsior guano.	Jaimaca, L. I.	124

FERTILIZERS, ETC.—(Continued.)

	NITROGEN.		PHOSPHORIC ACID.			Potash soluble in water. De- termined as potash.
	Deter- mined as nitrogen.	Equivalent to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	0.83 to 1.65 1.17	1 to 2 1.42	8 to 10 8.01	2 1.72	10 to 12 9.73	1 to 2 2.90
Guaranteed Found.	1.65 to 2.5 2.53	2 to 3 3.07	7 to 9 10.90	1 to 2 1.88	8 to 10 12.78	1 to 2 1.97
Guaranteed Found.	2.9 to 3.7 3.76	3.5 to 4.5 4.56	8 to 10 11.00	1 to 2 1.72	9 to 12 12.72	3 to 4. 6.21
Guaranteed Found.	3.3 to 4.1 3.94	4 to 5 4.78	8.5 to 10 9.20	..... 0.84	10 to 12 10.04	7 to 8 8.32
Guaranteed Found.	0.83 to 1.65 1.39	1 to 2 1.68	8 to 10 8.39	2 1.78	10 to 12 10.17	4 to 6 3.66
Guaranteed Found.	2.05 to 2.90 2.16	2.5 to 3.5 2.62	8 to 10 9.88	2 2.15	10 to 12 12.03	1.5 to 2.5 4.10
Guaranteed Found.	2.05 to 2.90 2.20	2.5 to 3.5 2.66	9 to 10 8.90	..... 2.10	11 to 12 11.00	6 to 8 6.34
Guaranteed Found.	2.05 to 2.90 2.69	2.5 to 3.5 3.27	8 to 10 9.23	..... 1.68	10 to 12 10.91	1.5 to 2.5 2.79
Guaranteed Found.	2.9 to 3.9 3.50	3.5 to 4.7 4.24	9 to 11 10.22	..... 1.75	11 to 13 11.97	2 to 3 3.13
Guaranteed Found.	1.65 to 2.05 2.15	2 to 2.5 2.61	8 to 10 8.13	..... 1.87	..... 10.00	1.6 to 2.15 2.78
Guaranteed Found.	2.5 to 3.3 3.25	3 to 4 3.94	6 to 7 7.16	..... 0.84	..... 8.00	8 to 10 8.81
Guaranteed Found.	6.6 to 8.2 6.76	8 to 10 8.21	6 to 8 8.22	2 to 3 0.75	..... 8.97	2.5 to 3 3.28
Guaranteed Found.	3.3 to 4.1 3.70	4 to 5 4.50	9 to 12 9.97	1 to 2 1.28	10 to 12 11.25	3.40 5.18
Guaranteed Found.	2.5 to 3.3 2.80	3 to 4 3.39	8 to 10 8.19	1 to 2 0.67	8 to 10 9.86	6 to 8 6.61

XXVI. RESULTS OF ANALYSES OF COMMERCIAL

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
E. Frank Coe, 16 Burling Slip, New York city.	Red brand ex-celsior guano.	Jamaica, L. I.	125
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.	Ammoniated bone super-phosphate.	Rome. Brockport.	149 365
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.	Ammoniated wheat and corn phosphate.	Geneva.	390
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.	Dissolved bone black.	Brockport.	366
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.	New rival ammoniated super-phosphate.	Rome. Brockport.	148 363
Crocker Fertilizer and Chemical Co., Buffalo, N. Y.	Special potato manure.	Brockport.	364
Darling Fertilizer Co., Pawtucket, R. I.	Animal fertilizer	New Suffolk, L. I.	527
J. H. Devins, Utica, N. Y.	J. H. Devins fertilizer.	Utica.	140
Ellsworth, Tuthill & Co., Promised Land, L. I.	No. 2 fertilizer.	Promised Land, L. I.	529
Farmers' Fertilizer Co., Syracuse, N. Y.	Fair and square.	Geneva.	391
G. B. Forrester, New York city.	Potato manure.	Flatlands, L. I. Canarsie, L. I. Gravesend, L. I. Jamaica.	68 84 88 132
Great Eastern Fertilizer Co., New York city.	Garden special.	Hollis, L. I.	118
Great Eastern Fertilizer Co., New York city.	Garden special.	Mattituck, L. I.	532
Great Eastern Fertilizer Co., New York city.	Vine and tobacco fertilizer.	Mattituck, L. I.	533
Hallock & Duryea, Mattituck, L. I.	No. 1 fertilizer.	Aquebogue, L. I.	528

FERTILIZERS, ETC.—(Continued).

	NITROGEN.		PHOSPHORIC ACID.			Potash, soluble in water. De- termined as potash.
	Deter- mined as nitrogen.	Equivalent to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	3.3 to 4.1 3.50	4 to 5 4.24	9 to 12 9.54	1 to 3 0.79	8 to 12 10.34	6 5.67
Guaranteed Found.	2.9 to 3.7 3.18	3.5 to 4.5 3.85	10 to 12 9.50	1 to 2 1.62	11 to 13 11.12	1.1 to 1.6 2.26
Guaranteed Found.	2.05 to 2.9 4.00	2.5 to 3.5 4.85	10 to 13 10.65	1 to 2 0.45	11 to 15 11.10	1.75 to 2.8 3.75
Guaranteed Found.	..... .....	..... .....	15 to 18 17.05	..... 0.45	..... 17.50	..........
Guaranteed Found.	1.25 to 2.05 1.76	1.5 to 2.5 2.13	10 to 12 10.59	1 to 3 2.86	11 to 15 13.45	1.6 to 2.2 3.11
Guaranteed Found.	3.7 to 4.5 4.55	4.5 to 5.5 5.52	8 to 9 7.78	1 to 2 1.59	9 to 10 9.37	5.5 to 6.5 6.09
Guaranteed Found.	3.3 to 4.95 4.71	4 to 6 5.72	7 to 9 6.80	..... 2.30	..... 9.10	9 to 11 8.57
Guaranteed Found.	2.5 to 3.3 3.24	3 to 4 3.93	7 to 9 7.70	2 to 3 2.91	9 to 12 10.61	2 to 3 2.47
Guaranteed Found.	4.1 4.59	5 5.57	4 4.03	..... 0.25	..... 4.28	7 7.79
Guaranteed Found.	2.5 to 4.1 2.95	3 to 5 3.57	7 to 9 10.84	1 to 2 0.99	8 to 11 11.83	0.54 to 1.08 1.78
Guaranteed Found.	3.70 4.64	4.5 5.63	5.5 6.47	..... 0.28	..... 6.75	10 11.21
Guaranteed Found.	3.3 to 4.1 3.00	4 to 5 3.63	6 to 8 7.77	..... 0.86	..... 8.63	8 to 10 8.77
Guaranteed Found.	3.3 to 4.1 3.82	4 to 5 4.65	6 to 8 6.94	..... 0.87	..... 7.81	8 to 10 7.65
Guaranteed Found.	2.05 to 2.5 2.72	2.5 to 3 3.30	8 to 12 8.37	1 to 3 0.47	9 to 15 8.84	6 to 8 8.22
Guaranteed Found.	3.3 to 4.95 3.79	4 to 6 4.60	7 to 9 7.64	..... 0.10	..... 7.74	9 to 11 9.14

XXVI. RESULTS OF ANALYSES OF COMMERCIAL

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
Lister's Agricultural and Chemical Works, Newark, N. J.	Ammoniated dissolved bone.	Rochester. Brockport. Rome.	226 375 147
Lister's Agricultural and Chemical Works, Newark, N. J.	Dissolved bone black.	York.	445
Lister's Agricultural and Chemical Works, Newark, N. Y.	Perfect fertilizer.	Rochester.	227
Lister's Agricultural and Chemical Works, Newark, N. J.	Potato manure.	Flatlands, L. I.	79
Lister's Agricultural and Chemical Works, Newark, N. J.	Potato No. 2.	Rochester.	225
Listers' Agricultural and Chemical Works, Newark, N. J.	Standard super-phosphate of lime.	Brockport. Rome.	377 146
Listers' Agricultural and Chemical Works, Newark, N. J.	Success.	Rochester. Spencerport.	224 378
Listers' Agricultural and Chemical Works, Newark, N. J.	Cauliflower and cabbage fertilizer.	Flatlands, L. I.	80
Frederick Ludlam, 140 Maiden lane, New York city.	Cecrops or dragon's tooth brand.	Flatlands, L. I.	72
Mapes' Formula and Peruvian Guano Co., New York city.	Cabbage and cauliflower manure.	Flatlands, L. I.	75
Mapes' Formula and Peruvian Guano Co., New York city.	Complete manure, A brand.	Flatlands, L. I.	74
Mapes' Formula and Peruvian Guano Co., New York city.	Complete manure for light soils.	Jamaica, L. I.	103
Mapes' Formula and Peruvian Guano Co., New York city.	Economical manure.	Southold, L. I.	522
Mapes' Formula and Peruvian Guano Co., New York city.	Nitrogenized superphosphate.	Southold, L. I.	523
Mapes' Formula and Peruvian Guano Co., New York city.	Potato manure L. I. special.	Jamaica, L. I.	102

FERTILIZERS, ETC.—(Continued).

	NITROGEN.		PHOSPHORIC ACID.			Potash, soluble in water. De- termined as potash.
	Deter- mined as nitrogen.	Equivalent to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	1.8 to 2.05 2.33	2.2 to 2.5 2.82	9 to 10 11.36	..... 1.20	..... 12.56	1.5 to 2 2.98
Guaranteed Found.	..... .....	..... .....	10 to 13 11.95	..... 1.48	..... 13.43	..........
Guaranteed Found.	1.00 to 1.65 1.56	1.25 to 2 1.89	10.5 to 12 11.55	..... 1.68	..... 13.23	1.5 to 2 2.52
Guaranteed Found.	3.7 to 4.1 4.10	4.5 to 5 5.01	7.5 to 9 8.31	..... 0.35	..... 8.66	7 to 8 8.10
Guaranteed Found.	1.8 to 2.5 2.16	2.2 to 3 2.60	9.25 to 11 12.01	..... 1.03	..... 13.04	4 to 5 4.62
Guaranteed Found.	2.35 to 2.7 2.36	2.85 to 3.25 2.87	10 to 12 10.86	2 to 3 1.95	..... 12.81	1.5 to 2 2.32
Guaranteed Found.	1 to 1.65 2.08	1.25 to 2 2.52	10.5 to 12 11.55	..... 1.06	..... 12.61	1.5 to 2 3.11
Guaranteed Found.	3.7 to 4.1 3.54	4.5 to 5 4.30	7.5 to 9 7.90	..... 0.37	..... 8.27	7 to 8 8.40
Guaranteed Found.	3.3 to 4.1 3.02	4 to 5 3.88	7 to 9 7.29	..... 2.07	..... 9.36	7 to 9 8.83
Guaranteed Found.	4.1 to 5.35 3.80	5 to 6 4.61	6 to 8 7.80	..... 1.24	..... 9.04	6 to 8 6.31
Guaranteed Found.	2.5 to 3.3 2.72	3 to 4 3.30	10 to 12 13.06	2 to 4 1.14	12 to 16 14.20	2.5 to 3.5 4.61
Guaranteed Found.	4.95 to 6.6 4.41	6 to 8 5.35	7 to 9 7.85	..... 0.97	..... 8.82	6 to 8 7.44
Guaranteed Found.	2.5 to 3.3 3.39	3 to 4 4.11	6 to 8 8.82	2 1.30	8 to 10 10.12	8 to 10 9.03
Guaranteed Found.	2.05 to 2.5 2.99	2.5 to 3 3.62	9 to 11 12.48	2 1.01	11 to 13 13.49	2.5 to 3 2.98
Guaranteed Found.	3.3 to 4.1 3.37	4 to 5 4.08	6 to 8 8.64	..... 0.53	7 to 9 9.17	7 to 9 7.87

XXVI. RESULTS OF ANALYSES OF COMMERCIAL

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
Mapes' Formula and Peruvian Guano Co., New York city.	Vegetable manure, L. I. special.	Flatlands, L. I.	76
Maryland Fertilizing Co., Baltimore, Md.	Linden superphosphate.	Waterloo.	219
Maryland Fertilizing Co., Baltimore, Md.	Potato food.	Waterloo.	218
Maryland Fertilizing Co., Baltimore, Md.	Pure gold.	Waterloo.	216
Maryland Fertilizing Co., Baltimore, Md.	Sangston's cereal and plant food.	Pittsford.	355
Maryland Fertilizing Co., Baltimore, Md.	Tornado fertilizer.	Waterloo.	217
C. Meyer, Jr., Maspeth, L. I.	Acme fertilizer No. 1 for potatoes.	Parkville, L. I.	49
C. Meyer, Jr., Maspeth, L. I.	Acme fertilizer No. 2 for cabbage.	Parkville, L. I.	50
C. Meyer, Jr., Maspeth, L. I.	Acme potato fertilizer.	Aquebogue, L. I.	515
Michigan Carbon Works, Detroit, Mich.	Homestead.	Livonia.	443
Michigan Carbon Works, Detroit, Mich.	Homestead potato grower.	Livonia.	442
Milsom Rendering and Fertilizer Co., East Buffalo, N. Y.	Buffalo fertilizer.	Canandaigua.	785
Milsom Rendering and Fertilizer Co., East Buffalo, N. Y.	Cyclone pure bone meal.	Pittsford.	354
Milsom Rendering and Fertilizer Co., East Buffalo, N. Y.	Pure dissolved bone.	Brockport.	360
Milsom Rendering and Fertilizer Co., East Buffalo, N. Y.	Vegetable bone fertilizer.	Pittsford. Spencerport.	351 382

FERTILIZERS, ETC.—(Continued).

	NITROGEN.		PHOSPHORIC ACID.			Potash, soluble in water. De- termined as potash.
	Deter- mined as nitrogen.	Equivalent to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	4.1 to 4.95 4.12	5 to 6 5.00	7 to 9 7.69	..... 1.12	..... 8.81	4 to 6 6.18
Guaranteed Found.	..... .....	..... .....	10 to 13 10.67	1 to 2 0.80	..... 11.47	2 to 4 1.96
Guaranteed Found.	2.25 to 2.7 3.01	2.75 to 3.25 3.65	10 to 13 9.89	1 to 2 2.30	..... 12.19	2.5 to 3 3.26
Guaranteed Found.	..... .....	..... .....	10.5 to 14 12.27	1 to 2 0.25	..... 12.52	3.25 to 4 4.89
Guaranteed Found.	1 to 1.65 1.42	1.25 to 2 1.72	10 to 13 9.72	1 to 2 2.53	..... 12.25	2.25 to 3.5 3.56
Guaranteed Found.	0.42 to 0.83 1.22	0.5 to 1 1.47	10 to 15 11.08	1 to 2 0.55	11 to 15 11.63	3 to 4 4.43
Guaranteed Found.	3.3 to 4.1 4.18	4 to 5 5.08	7 to 8 8.35	..... 1.12	8 to 9 9.47	9 to 10 9.42
Guaranteed Found.	4.95 to 5.35 5.20	6 to 6.5 6.32	7 to 8 8.92	..... 1.28	8 to 9 10.20	5 to 6 7.14
Guaranteed Found.	2.9 to 3.3 3.45	3.5 to 4 4.19	7 to 8 8.22	..... 1.01	..... 8.23	8 to 10 7.78
Guaranteed Found.	1.85 to 2.4 3.39	2.25 to 3.15 4.08	8 to 11 8.75	..... 1.52	..... 10.27	1.5 to 1.75 1.79
Guaranteed Found.	3 to 4 4.02	3.5 to 4.75 5.10	10 to 11 11.30	..... 1.13	..... 12.43	3.5 to 4 3.93
Guaranteed Found.	2.5 to 3.8 2.66	3 to 4.65 3.23	8 to 12.30 12.35	2 to 3 1.14	10 to 15.30 13.49	1.5 to 2.5 3.07
Guaranteed Found.	3.3 to 4.1 4.82	4 to 5 5.85	..... .....	..... .....	25.00 23.46	..........
Guaranteed Found.	..... .....	..... .....	11 to 13 13.59	1.37 to 2.37 1.67	12.37 to 15.37 15.26	..........
Guaranteed Found.	4.1 to 4.95 4.07	5 to 6 4.94	8 to 10 8.16	3 to 4 1.56	11 to 14 9.72	5 to 6 7.56

XXVI. RESULTS OF ANALYSES OF COMMERCIAL

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
Milsom Rendering and Fertilizer Co., East Buffalo, N. Y.	Wheat, oats and barley phosphate.	Waterloo. Pittsford. Brockport.	214 300 358
L. Mittenmaier, Rome, N. Y.	Pride of America.	Rome.	209
National Fertilizer Co., Bridgeport, Conn.	Chittenden's complete fertilizer.	Queens, L. I.	123
J. E. Phelps, Jamaica, L. I.	Fish brand potato fertilizer.	Jamaica, L. I.	111
J. E. Phelps, Jamaica, L. I.	Highest grade perennial complete fertilizer.	Jamaica, L. I.	112
J. E. Phelps, Jamaica, L. I.	Perennial grain fertilizer.	Jamaica, L. I.	114
J. E. Phelps, Jamaica, L. I.	Perennial potato and cabbage fertilizer.	Jamaica, L. I.	113
Preston Fertilizer Co., Greenpoint, L. I.	Ammoniated bone superphosphate.	Queens, L. I.	122
Quinnipiac Co., New York city.	Ammoniated dissolved bone	Spencerport. Brighton.	386 243
Quinnipiac Co., New York city.	Climax phosphate.	Brighton.	242
Quinnipiac Co., New York city.	Fish, bone and potash.	Brighton.	240
Quinnipiac Co., New York city.	Market garden manure.	Hollis, L. I.	117
Quinnipiac Co., New York city.	Potato manure.	Jamesport, L. I.	525
Quinnipiac Co., New York city.	Potato phosphate.	Brighton.	244
Quinnipiac Co., New York city.	Soluble dissolved bone.	Brighton.	241

FERTILIZERS, ETC.—(Continued).

	NITROGEN.		PHOSPHORIC ACID.			Potash, soluble in water. De- termined as potash.
	Deter- mined as nitrogen.	Equivalent to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	1.65 to 3.3 2.00	2 to 4 2.42	8 to 10 7.83	2 to 3 2.24	10 to 13 10.07	2 to 3 3.51
Guaranteed Found.	1.65 to 2.5 2.97	2 to 3 3.60	6 to 9 6.26	..... 1.24	..... 7.50	3 to 6 2.56
Guaranteed Found.	3.3 to 4.1 3.94	4 to 5 4.78	6 to 8 9.06	..... 1.83	8 to 10 10.89	6 to 8 7.42
Guaranteed Found.	3.3 to 4.1 3.53	4 to 5 4.28	4 to 6 8.67	3 0.89	7.5 to 9 9.46	10 to 11 10.97
Guaranteed Found.	4.95 to 5.75 6.00	6 to 7 7.30	..... 11.48	..... 2.53	12.5 to 14 14.01	11 to 12 11.57
Guaranteed Found.	3.3 to 4.1 3.44	4 to 5 4.18	..... 11.92	..... 6.28	14.5 to 16 18.20	7 to 8 7.05
Guaranteed Found.	4.1 to 4.95 4.41	5 to 6 5.36	..... 9.15	..... 2.69	11.5 to 13 11.84	11 to 12 11.56
Guaranteed Found.	2.5 to 3.3 3.41	3 to 4 4.13	9 to 11 9.17	..... 1.09	..... 10.26	2 to 3 4.19
Guaranteed Found.	2 to 3 2.69	2.4 to 3.6 3.23	9 to 12 10.25	..... 1.04	10 to 14 11.29	2.15 to 3.25 3.75
Guaranteed Found.	1 to 2 2.06	1.2 to 2.4 2.51	9 to 10 9.53	..... 0.61	11 to 12 10.14	2.15 to 3.25 3.04
Guaranteed Found.	1.65 to 2.5 2.84	2 to 3 3.45	9 to 10 9.62	1 to 2 0.87	10 to 12 10.49	1 to 1.5 1.76
Guaranteed Found.	3.3 to 4.1 3.60	4 to 5 4.37	8 to 11 8.50	1 to 2 0.78	9 to 13 9.28	7 to 8 8.16
Guaranteed Found.	2.5 to 3.3 3.06	3 to 4 3.71	6 to 9 7.85	1 to 2 0.49	7 to 11 8.34	5.5 to 6.5 6.43
Guaranteed Found.	2.25 to 3.5 3.21	2.7 to 4.2 3.89	8 to 11 8.58	1 to 2 1.66	9 to 13 10.24	3 to 4 4.40
Guaranteed Found.	..... .....	..... .....	12 to 15 11.92	1 to 2 2.43	13 to 17 14.35	..........

XXVI. RESULTS OF ANALYSES OF COMMERCIAL

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
Read Fertilizer Co., New York city.	Farmer's friend.	Jamaica, L. I.	130
Read Fertilizer Co., New York city.	High grade farmer's friend.	Mattituck, L. I.	534
Read Fertilizer Co., New York city.	I. C. Hendrickson's complete fertilizer.	Jamaica, L. I.	110
Read Fertilizer Co., New York city.	Standard phosphate.	Spencerport.	385
John S. Reese & Co., Baltimore, Md.	Crown bone phosphate.	Brockport.	357
John S. Reese & Co., Baltimore, Md.	Great planet "A" manure.	Jamaica, L. I.	104
John S. Reese & Co., Baltimore, Md.	Great planet "B" manure.	Jamaica, L. I.	105
Rochester Fertilizer Co., Rochester, N. Y.	Alkali bone guano.	Lima.	436
Rochester Fertilizer Co., Rochester, N. Y.	Bone and blood guano.	Brockport.	374
Springfield Fertilizer Co., Springfield, Ohio.	Soluble bone phosphate.	Waterloo.	223
H. Stappenbeck, Utica, N. Y.	Home trade bone superphosphate.	Utica.	137
Sterling Oil Co., Promised Land, L. I.	Fish scrap.	Jamesport, L. I.	526
W. D. Stewart & Co., Boston, Mass.	Nobsque guano.	Brighton.	239
W. D. Stewart & Co., Boston, Mass.	Riverhead Town Agricultural Society fertilizer.	Aquebogue.	536
W. D. Stewart & Co., Boston, Mass.	Riverhead Town Agricultural Society fertilizer.	Aquebogue.	537

FERTILIZERS, ETC.— (Continued).

	NITROGEN.		PHOSPHORIC ACID.			Potash soluble in water. De- termined as potash.
	Deter- mined as nitrogen.	Equivalent to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	1.85 to 2.5 2.30	2.25 to 3 2.79	9 to 11 9.52	2 to 3 1.18	11 to 13 10.70	1 to 2 3.88
Guaranteed Found.	3.3 to 4.1 3.21	4 to 5 3.89	7 to 9 7.81	..... 1.66	..... 9.47	7 to 9 7.89
Guaranteed Found.	3.3 to 4.1 3.08	4 to 5 3.73	7 to 9 8.16	..... 0.65	..... 8.81	7 to 9 7.63
Guaranteed Found.	0.83 to 1.65 1.12	1 to 2 1.36	8 to 10 8.52	2 to 4 1.03	10 to 14 9.55	4 to 6 4.33
Guaranteed Found.	..... .....	..... .....	12 to 14 13.37	..... 2.36	..... 15.73	3 to 4 3.16
Guaranteed Found.	3.3 to 4.1 3.28	4 to 5 3.98	7 to 9 7.57	..... 0.65	..... 8.22	9.5 to 11 10.87
Guaranteed Found.	4.95 to 5.75 5.06	6 to 7 6.14	5 to 6 7.23	..... 0.64	..... 7.87	7 to 9 7.73
Guaranteed Found.	..... .....	..... .....	8 to 10 8.80	..... 1.74	..... 10.54	3 to 5 2.82
Guaranteed Found.	1 to 1.85 1.29	1.15 to 2.25 1.67	8 to 10 8.82	..... 1.64	..... 10.46	1.6 to 2.7 1.61
Guaranteed Found.	0.83 to 1.65 2.25	1 to 2 2.73	6 to 8 8.44	1 to 2 1.69	7 to 10 10.13	3 to 4 4.98
Guaranteed Found.	2.5 to 3.3 3.06	3 to 4 3.71	8 to 12 9.23	1 to 2 0.96	..... 10.19	2 to 3 2.54
Guaranteed Found.	7.41 7.69	9 9.35	..........	..........	..........	..........
Guaranteed Found.	1.15 to 1.65 2.17	1.4 to 2 2.63	9 to 12 8.69	2 to 3 1.58	..... 10.27	2 to 3 2.47
Guaranteed Found.	4.10 4.21	5 5.11	8 8.43	..... 1.03	..... 9.46	10 10.30
Guaranteed Found.	4.10 3.82	5 4.64	8 8.67	..... 1.39	..... 9.96	10 9.88

XXVI. RESULTS OF ANALYSES OF COMMERCIAL

MANUFACTURER.	Trade name or brand.	Locality where sample was taken.	Station number.
W. D. Stewart & Co., Boston, Mass.	T. and A.	Southold, L. I.	520
Tygert-Allen Fertilizer Co., Philadelphia, Pa.	Allen's potato manure.	Hollis, L. I. Flatlands, L. I.	116 81
Tygert-Allen Fertilizer Co., Philadelphia, Pa.	Cabbage manure	Hollis, L. I.	115
Williams & Clark, New York city.	Acorn brand acid phosphate.	Rochester. Waterloo.	249 221
Williams & Clark, New York city.	Americus brand ammoniated bone super-phosphate.	Rochester.	246
Williams & Clark, New York city.	Dried blood and animal matter.	Rochester.	248
Williams & Clark, New York city.	Potato phosphate.	Jamaica, L. I.	108
Williams & Clark, New York city.	Royal bone phosphate.	Waterloo. Rochester.	220 247
Williams & Clark, New York city.	Universal ammoniated dissolved bone.	Jamaica, L. I.	109

FERTILIZERS, ETC.—(Concluded).

	NITROGEN.		PHOSPHORIC ACID.			Potash soluble in water. De- termined as potash.
	Deter- mined as nitrogen.	Equivalent to ammo- nia.	Available.	Insoluble.	Total.	
Guaranteed Found.	2.5 to 3.3 2.74	3 to 4 3.32	8 to 10 8.10	..... 0.87	..... 8.97	6 to 8 6.53
Guaranteed Found.	3.3 to 4.1 3.36	4 to 5 4.08	6 to 7 6.13	..... 1.25	9 to 10 7.38	10 to 11 10.13
Guaranteed Found.	3.7 to 4.5 4.58	4.5 to 5.5 5.56	7 to 8 10.65	..... 0.62	9 to 10 11.27	5 to 6 5.28
Guaranteed Found.	..... .....	..... .....	12 to 15 12.74	..... 1.77	13 to 17 14.51	..........
Guaranteed Found.	2.5 to 3.3 3.38	3 to 4 4.10	10 to 12 10.99	..... 1.13	11 to 14 12.12	2 to 3 2.80
Guaranteed Found.	6.6 to 8.2 8.66	8 to 10 10.51	..........	..........	..........	..........
Guaranteed Found.	2 to 3 2.61	2.4 to 3.6 3.04	7 to 9 8.59	..... 1.42	8 to 10 10.01	6 to 8 6.54
Guaranteed Found.	0.83 to 1.85 2.14	1 to 2.25 2.60	7 to 9 8.15	..... 0.61	8 to 10 8.66	2 to 3 2.76
Guaranteed Found.	2 to 3 2.28	2.4 to 3.6 2.77	8 to 11 9.65	1 to 2 1.25	9 to 12 10.90	2 to 3 3.56

REPORT OF ACTING HORTICULTURIST.

The work of this department for this year consisted of varietal tests of small fruits, continued work on the cross pollination of strawberries, tests of commercial fertilizers on small fruits, spraying with fungicides for fungoid diseases of small fruits, tests of the newly introduced varieties of potatoes, tests of commercial fertilizers on potatoes, spraying with fungicides for the potato blight, tests of vegetable novelties of late introduction, tests of commercial fertilizers on the yield of beans, tests of fertilizers on forced tomatoes, and minor matters of more or less value.

The policy of this department has been to test all the promising new fruits produced as soon as possible after they have been offered on the market, or before, if possible, and although it is claimed by some that the testing of varieties of fruits by the Experiment Station is of purely mechanical nature, and does not come strictly under the head of Station work, this Station takes the ground that it is the province of the Station to stand between the originator or introducer and the public, and as far as possible protect and aid the purchaser in his efforts to procure only the varieties of new fruits that equal or excel the well-known old varieties, and the prediction is ventured that the time is near when the public will demand a certificate of merit from the Experiment Stations before they will buy new varieties of fruits, however much they may be lauded by those interested in the sale of them. That it will be to the advantage of the originator and introducer no one can doubt, as the wide range of country covered by the Experiment Stations, their facilities for testing and comparing, and the honest, unprejudiced opinions formed by the persons in charge would give any fruit of merit a prestige more valuable than any amount of money spent in colored plates and puffing. One case to the point is a new strawberry, the originator of which quietly sent plants to the various Experiment Stations

in the spring of 1890, saying he wished reports from these Stations, favorable or unfavorable, before placing it on the market. This past season it has fruited at these Stations, and reports were sent to him. He will now decide whether it has value enough over older varieties to warrant its introduction. If it has met with favorable commendations from the majority of the Stations, who will doubt but what those testimonials will more than pay for the one year of waiting while this variety was under test? Few horticultural workers, either amateur or professional, have the same advantages generally found in a well-equipped Experiment Station to compare new fruits with older varieties, or the means at their disposal to pursue a systematic line of comparison as new fruits are introduced.

The work of cross pollination of strawberries was continued last winter and spring with the same object in view as that of the season before. The seedlings resulting from the crosses made in 1889 and 1890 show the strong individuality of several of the varieties used as the mother plant, the majority of the seedling plants of certain crosses being of the same habit of growth and general appearance as the mother plant. These seedling plants should bloom next season, and give a partial solution of the questions of being able to breed either a perfect flowering or a pistillate variety at will, or to breed a variety for a certain purpose.

Since the season's work has been completed this Station has been in receipt of numerous inquiries in regard to the efficacy of any preparation for the prevention of the potato blight, and we are able to say that marked success has been obtained by the use of the Bordeaux mixture. At this Station a gain of forty-eight bushels per acre was made by the applications of this mixture, and but little less by the use of ammoniacal solution. From other Stations come testimonials to the same effect, notably from Rhode Island, where practically the same results have been obtained as at this Station. The discussion of this matter will be found in the body of this report.

The effects of spraying with fungicides for the anthracnose of the raspberry were not of a very satisfactory nature, and although it appeared that the plants sprayed with Bordeaux mixture were benefited to a certain extent, it is thought best to continue this

work through a longer period before making any claims in regard to the matter. Sprayings were made for strawberry leaf blight with beneficial results, both in the use of Bordeaux mixture and ammoniacal solution, and it is probable that either of these remedies will be used to good advantage in the future. The use of fungicides in preventing gooseberry mildew will be discussed in the body of this report.

I would respectfully call attention to the fact that, at several of the fairs held in the western part of the State, this Station has made an exhibit consisting of the constituents of ten different cattle foods, showing the relative value of each; an exhibit showing the chemical composition of the ash of fruit and wood of five of the more common fruits, namely, apple, pear, cherry, plum and grape; twenty samples of materials used in making commercial fertilizers, and an exhibit of fruits affected by fungus and several of the most efficacious remedies used in preventing the growth of injurious fungi. These exhibits were shown in glass show bottles and were practical object lessons in their different lines. The Station also exhibited at the State fair, at Syracuse, forty-five varieties of apples, sixty varieties of grape, twenty varieties of pears, twelve of plums and fifty varieties of potatoes; also, an exhibit of fifty varieties of pasture, meadow and lawn grasses, and charts showing the fertilizing value and pounds of fertilizers per ton of twenty-one different crops, and the proximate analysis of eleven cattle foods.

This exhibit, as a whole, attracted a great deal of attention, and many words of commendation from the visitors at these various fairs. These several exhibits were accompanied by bulletins giving a description of each, and a large number of these bulletins were distributed to those interested in the lines of work exhibited. The value of attendance on fairs with these object lessons can not be overestimated, as it puts the work of the Station before a large number of those interested who find it impossible to visit the Station grounds.

SMALL FRUITS.

Under the head of small fruits we class first the strawberry, next the raspberry, third the blackberry, fourth the currant and fifth the gooseberry. The grape will be considered in a future

bulletin. In a bulletin on strawberries issued from this Station in October, 1890, special stress was placed on the ease and cheapness of growing this fruit by farmers, allowing every family to be able to have strawberries for all purposes with but little expense of money or time. We shall endeavor, in this report, to urge more forcibly this matter of small fruit growing by the average farmer, showing as we hope the large profit both in health and money to be derived from a small fruit plantation of the several varieties of fruits that mature early, and give paying results in from one to three years. One objection usually raised by farmers when asked to grow small fruits is the lack of time and skill. These objections may be answered by saying that the time necessary to plant one-fourth of an acre of strawberries need not be more than to plant the same area of cabbage or potatoes, and, as to skill, anyone who has set cabbage, celery or sweet potatoes, can set strawberry plants. The knowledge of the fact that one must set perfect flowering varieties with the pistillate or imperfect varieties is essential, but, further than that, clean tillage is the only very important point to be impressed on one's mind. The item of cost of plants is also reckoned as one of the hindrances to the cultivation of this fruit, and, viewed in certain ways, it is a very large item, but, if plants of any of the older well-tested varieties are selected, they can be bought by the thousand cheaper than any of the newer varieties can be bought by the hundred. One should be able to get any of the standard varieties at from three to four dollars per thousand, which, if set in rows three feet apart and the plants two feet apart in the rows will take 7,260 plants per acre, making one-fourth of an acre cost from five to eight dollars for plants. The further cost depends on the amount of tillage given and the expense of help, while the returns will usually average 500 quarts on one-fourth acre, which, if calculated at ten cents a quart, will more than pay for plants and labor, leaving only the labor as the cost of the second year's crop, which often gives the best yield and at the same time gives runners to set in new plantation.

Of raspberries it will not be necessary to buy or set a large number of plants. Fifty plants of both red and black raspberries, if well taken care of, will yield all a family of six can use, both

on their table during fruiting season and for canning. These, if manured well and kept from growing in a jungle of canes, will last six years, and give good returns. It will be well for one about to set out raspberries to select a few bushes of the yellow varieties, as they are of the right color to go with white currants, either for canning or for jelly. Of blackberries one must test several varieties or inform himself from some source in regard to their hardiness, as, in exposed localities, they are often found to winter-kill. There is no fruit that can be put to more uses than the blackberry, and, if the locality is in their favor, none that will yield a larger profit on the investment.

The currant is a fruit grown by almost everyone, and in many cases the only small fruit available to the housewife. This seems to be so, simply from the fact that the currant will stand almost any amount of abuse and live to bear fruit, but such fruit is small in berry, short of stem and the stem but partially filled. These bushes are often hidden by a growth of tall weeds that would kill anything but a currant.

Gooseberry bushes may often be found growing in a partially neglected condition in gardens, bearing crops of small mildewed fruits, but rarely does one see the English varieties with their large shiny leaves and luscious fruits as large as Damson plums. Those who have eaten at their prime these last will never again be satisfied with the small native varieties like Houghton or Mountain Seedling.

The growing of black currants seems to be on the increase at this time, and among the varieties tested here the Prince of Wales seems at this time to be the most productive, although the Champion Black, Lee's Prolific and Baldwin's Black are all first class.

STRAWBERRIES.

A DESCRIPTION OF THE NEWER VARIETIES.

Bessie, Imp. — A variety from Maryland. The growth of foliage is all that could be desired; leaves large and rich dark green fruit-stem weak, and fruits should lay on mulch. The few plants that fruited produced fruit of large size, but very soft; many plants were, however, barren. Even those in stool row, that were of very great size, failed to produce blossom, or fruit. Season early.

Beeder Woods, P.—This has proved the most productive newly tested variety fruited this year. Growth of plants, stocky; foliage, dark green; fruit-stems, long and weak; must be mulched; the fruits, which are produced in large clusters, are not extra large, but of good market size and hold their size through a long picking season. We picked fruits for twenty-one days. The berries are conical, showy, scarlet; too soft to ship long distances, and subacid.

California, P.—This is received from Delaware. It is of low stocky growth; very short fruit-stems; fruits long, conical, with distinct neck; color dark scarlet; average in size, and firm; quality good.

Duboise, P.—A variety originated at Newburgh, N. Y. Growth similar to Sharpless; the fruits of this variety are different from any variety of strawberry tested, being very dry and spongy, and not of good quality; neither do the plants produce a large yield.

Edgar Queen, P.—This variety is from Illinois; is a wonderfully vigorous growing variety. Each plant was covered with bloom, but did not resist the drought as well as other varieties. It looked as if it would prove a complete failure, but revived after a heavy shower and produced a fair crop. We think it would have been very fine if the season had been normal.

Greenville.—This Ohio seedling has the same habit of growth and general appearance as Sharpless, but is more productive. The fruits do not seem to be fixed as to type; berries of the shape of Bubach and Sharpless, and others that were conical, being found on the same plant, but never with the green tip of the Sharpless. Fruits firm enough to ship, and although not of the finest flavor, better than the average. We think well of this, and consider it a promising new sort.

Gipsey, Imp.—This variety is low and stocky in growth, produced well in stool row, and was fairly productive in matted rows; berries of medium size, firm and of good flavor.

Hulbert, P.—Of Sharpless type of growth and foliage. The fruit-stems are very stout, holding large clusters of good-sized conical fruits well up in foliage, thus keeping the fruits clean when not mulched; fairly productive, firm; pleasing, subacid.

Kimsey's No. 49.—A Kansas seedling of vigorous growth, but of only medium productiveness; quite firm and tart.

Louise "Burpees," P. — Plants grow finely; foliage light green; very clean and healthy; berries produced in large clusters, of good size and a bright showy scarlet. This is a very attractive berry, and, being firm and of excellent quality, should become popular.

Lincoln. — This proved fairly productive of large-sized fruits of Sharpless type, without green tips; firm and fine quality.

Marvel, P. — Of low stocky growth, with dark green foliage. This set a large quantity of fruit, but was badly affected by drought, the berries, especially in matted rows, shrivelled up; fruits firm, but subacid.

Minneola. — Growth low and stocky; foliage light green; fruits heart-shaped, hulls cling to berry very firmly; and when removed, bring with them a hard core from the fruits; not very productive, soft, but good flavor.

Mrs. Cleveland, Imp. — Of vigorous growth; gave a few very large berries; the balance were small fruits, soft but of fine flavor.

Michels Early, P. — This variety has been very extensively disseminated for trial, the claims made for it being extreme earliness and productiveness. The plants sent to this Station were among the finest ever received, and made a wonderful growth the first season, the plants in stool rows looking like bushes, those in matted rows forming so many runners that it was necessary to thin out the rows, and every indication pointed to a successful harvest at fruiting time. This spring the plants uncovered in fine form, bloomed early and set a large number of fruits, but did not ripen them earlier than several other varieties; the fruits were below medium size, of very poor color, too light to market, and very soft. The only good points it seems to have are its pollen bearing qualities, its good flavor and its ability to cover a large area with runners. On good light sandy soil it may prove of more value, but here it has been a failure.

No. 1, Imp. — A cross of Manchester and Miner's Prolific. Growth of plant, fine; foliage light green; bears large clusters of conical fruit, showy red in color, and above the average size, firm and good flavor, not very productive this year.

New Improved Manchester, P. — A seedling of the same cross as the above. Growth of plant stocky; the fruit is of Jersey Queen

type and flavor, but darker than that variety. The fruits are hidden by the foliage, causing one to pass it by as not a very heavy yielder, but it is above the average in that respect; soft, but of a very fine flavor.

No. 19.—This variety, received from Delaware, is of very low stocky growth, with light green foliage; has large clusters of fruit borne on thick short stems; the fruits are in form, color and flavor a reproduction of the Jersey Queen, but average larger in size than the latter; they are firm enough to ship.

Ohio Centennial, Imp.—One of Geo. Townsend's seedlings of more than the average merit; fruits coxcombed, scarlet and of large size, firm and of fine flavor.

Oliver, P.—This is a very fine growing variety, making a fine bushy plant with showy green foliage; was not productive this year; fruits of Sharpless type, with the characteristic green tip of that variety, firm, with a pleasing subacid flavor.

Parker Earle, P.—With one year's fruiting of this variety, too much can not be said in its favor. The growth and habit of plant are perfect; its yield of fruit, while not up to the highest, is large, and the shape, uniformity of size, brilliant color and flavor combined, make a row of this variety appear the acme of strawberry growing; the fruits at first are green, then, just before ripening, a dead white, after ripening a glossy scarlet with yellow seeds projecting from fruits, each fruit having the appearance of being cut off square on the tip end. It has not the firmness of the Wilson, but we think will ship to near-by markets.

Pearl, P.—Not productive here.

Phillip's Seedling.—From Staunton, Ind. Is a variety of rank growth, with light green foliage; fruits borne on stiff fruit-stalks which, however, are not able to hold up the immense clusters of large berries; fruits resemble Sharpless without the green tip. The stool plants are enormously productive, and make a very fine display when the fruits are ripe. Firm and of fine flavor.

Shuster Gem, Imp.—This variety is well spoken of in some localities, but does not do well here; fails to make runners and produces but a small quantity of medium sized fruits.

Tippecanoe, P.—An improvement on Sharpless, more productive; fruits average larger, earlier and firmer.

Van Deman, P.—This is the best extra early variety ever tested on the Station grounds. The first picking of three quarts of any one variety were picked from this, and it continued in bearing for twenty-one days, ripening the bulk of its fruits, however, in ten days. The vigor of plants is good, growth stocky, and fruit hid beneath the dark foliage; berries a showy glossy scarlet with yellow seeds, firm and tart. We are of the opinion that this variety has a great future.

Of the varieties of strawberries tested for the second season, we will supplement our last report on them as follows:

Cloud.—This made a large quantity of runners, and in the spring looked finely, but suffered severely through drought, ripening but little fruit.

Felton, P.—About as last year. Its season is long; fruits of good size through picking, showy, firm, and of very fine flavor.

Gandy.—Slightly more productive than last year; fruits good size and firm; picking season from June twenty-five to July six.

Hinman.—This blighted worse than last year and will be discarded.

Itaska.—About as last year; has nothing special to recommend it.

Logan.—Nothing special to recommend it.

Lady Rusk.—This was more productive than last season, but the fruits run small, often being misshaped and, being a very dark berry, it does not rank with the first-class varieties.

Long John.—A failure, as last year; has been discarded.

Monmouth.—Also another failure this year.

Stayman's No. 1.—This did not stand the lack of moisture when setting its fruits, and fell behind its last year's record, but we think it a very good substitute for Crescent, and have faith that it will be extensively planted.

Stayman's No. 2.—The yield from this was slightly ahead of the No. 1 this year, but the fruits did not average as large, besides being soft.

Scarlet Gem.—A failure; has been discarded.

Viola.—Fruits very large, firm and of fine flavor, but not productive.

Windsor Chief.—Better than last year; a good garden variety.

Of the older varieties described in a previous bulletin, the best are : Burt's still in the lead ; Haverland, one of the best if it was not so soft ; Stayman's No. 1, while not as productive as last year, still among the leaders ; Middlefield, Mount Vernon, Windsor Chief, Hoffman, and Bubach a No. 1. The Warfield was found to have become mixed with other varieties in consequence of which no report of it is made, but, from a large number of other reports, it would seem to be one of the popular market varieties. In Oswego county, one of the leading berry-growing sections of this State, the Burt, Eureka, Warfield, Cloud and Bubach are among the leading varieties grown, averaging, in New York and Philadelphia markets, from ten to twelve cents a quart net. The strawberry industry of that section has grown to such proportions that refrigerator cars are furnished at the leading stations through the height of the season, shipped on fast trains, reaching the markets in fine condition, thus obtaining the highest market price.

In the vicinity of Geneva the growing of strawberries has received an impetus by the establishment of a canning factory, a large acreage having been planted in the past year. This factory has canned this season over 45,000 quarts, sending to Monroe and Oswego counties for part of their supply. They would like to be supplied with at least twice that amount, and will pay about six cents per quart. Of course, one growing extra fine fruit, requiring special care, can not afford to sell at these prices, but, through the middle of the season, when it often happens that the markets of the trade centers are glutted, the ability to dispose of the over-supply makes the difference between profit and loss. The danger of overdoing the strawberry industry is in the distant future, and from observation and reports it has been universally found that those who grow the strawberry and other small fruits for a livelihood are those whose farms are paid for, whose bank accounts foot up on the right side and whose homes compare favorably with those of their neighbors.

We would not advise anyone to undertake the growing of small fruits for markets without some knowledge of their culture, and an undertaking of the varieties best adapted to his market, whether at home or abroad. Still we believe that a young man can start with limited experience, and, by profiting by failures gain in a few years the practical knowledge necessary to success ;

and, if located near a first-class market, so as to be able to deliver directly to consumers, can, by raising the choice varieties, command the highest price for his fruits. For instance, one grower of this place, who delivers directly to private families, reports his lowest price this year as eighteen cents per quart. Of course, these were fancy fruits, carefully picked and in clean baskets, but there is no doubt that the care given increased his profits one-half. We should advise, if planting for a fancy market, the following varieties: Early, Haverland and Van Deman, medium season; Bubach, Sharpless and Burt's, for late; Crawford, Middlefield, Parker Earle and Gandy. If for distant market, Van Deman, Stayman's No. 1, Burt's. For near-by market, the last mentioned varieties with the addition of Beeder Woods, Parker Earle and possibly Mount Vernon.

Thus having Van Deman to pollenize Haverland; Bubach between Sharpless and Burt's; Middlefield between Parker Earle and Gandy. Most of these varieties have become so well known and so extensively propagated that they can be bought very reasonably, and they will increase so rapidly, that, starting with a few hundred plants, thousands can be had in a year's time, thus putting a beginning within the reach of almost anyone.

INSECT ENEMIES OF THE STRAWBERRY.

The insect enemies of the strawberry are numerous, although but few of them cause serious injury. Two of these pests that attack the root of the plant are the Strawberry Root-borer and the Strawberry Crown-borer. The first is a small caterpillar nearly half an inch long and of a reddish pink color. This borer eats irregular channels through the crown, often tunneling in various directions, eating its way to the surface. The caterpillar burrows into the heart of the plant and remains in one of the chambers during winter. In June it changes into a small reddish-brown chrysalis either in one of the cavities excavated in the crown or among decayed leaves or rubbish. The moth, which escapes in July is very small and of a dark gray color. This moth lays an egg on the crown of the plant late in July or early in August, which soon hatches and the caterpillar begins its depredations. The Crown-borer larva is a grub of about one-fifth of an inch long, white, with a horney-yellow head. The grub eats the substance of the crown and is very destructive. The remedies

recommended for these borers are dusting the plants with air-slaked lime or hellebore; or spraying with Paris green. But as these borers feed on the inside of the plants, and, when first discovered, have usually ruined the plants, the best method is to dig up all infested plants and burn them. The insects attacking the leaves of the strawberry are the following: The strawberry leaf roller, the neat strawberry leaf roller, the smeared dagger, the cut-worm, the strawberry saw-fly and several others. Only those mentioned are, however, considered numerous enough to cause much damage, and the remedies usually used are the same for all except the cut-worm, viz.: powdered hellebore and water in the proportion of an ounce of the hellebore to the pailful of water; Paris green and water, one teaspoonful of Paris green to two gallons of water. Either of these remedies have been proven of benefit, and, if not used while the fruit is on the plants, they will cause no injury.

The only disease of the strawberry that causes much damage is the leaf blight which is very prevalent in some years. The most efficacious remedy found for it has been the ammoniated carbonate of copper, sprayed on the vines after fruiting.

STRAWBERRIES — THE MOST PRODUCTIVE TWENTY-SIX IN ORDER OF PRODUCTIVENESS, SEASON OF 1891.

Stool Row.

Beeder Woods.
Phillip's Seedling.
Gipsev.
Van Deman.
Parker's Earle.
Haverland.
Crawford's Seedling.
Edgar Queen.
Smith's No. 77.
Hulburt.
Kimsey's No. 49.
Lincoln.
Stayman's No. 1.
Greenville.
Capt. Jack.

Matted Row.

Burts.
Beeder Woods.
Greenville.
Parker's Earle,
Phillip's Seedling.
Sou de Bossuet.
Capt. Jack.
Lyon's Seedling.
Lady Rusk.
Lincoln.
Ohio Centennial.
Mount Vernon.
Haverland.
Lida.
Windsor Chief.

Tippecanoe.	New Dominion.
Stayman's No. 2.	Hulburt.
Mrs. Cleveland.	Daisy.
Ohio Centennial.	Stayman's No. 1.
Burts.	Stayman's No. 2.
Eureka.	Leonard's Seedling.
Mitchell's Early.	Van Deman.
Lida.	Improved Manchester.
New Dominion.	Edgar Queen.
Sou de Bossuet.	Gipsev.
	Tippecanoe.

The matted rows of Burts yielding at the rate of 11,344 quarts per acre. The Beeder Wood, 10,890 quarts. The Greenville, 8,394. The Parker Earle, 8,168, while the Tippecanoe, the twenty-sixth in point of yield, gave 4,990 quarts. If these were sold at the lowest factory prices (six cents per quart) the returns would be profitable, but there is always a market at better prices than the above for all first-class fruits.

These estimates are taken from rows twenty-four feet long and four feet apart. One often hears of a yield of 20,000 quarts per acre, and as high as 40,000 quarts has been claimed, but at this Station we have been unable to obtain any advance on the figures given as the yield of Burt's for this year. At this time it may be well to state that the strawberries under test here are grown precisely as they should be grown by the small fruit grower, the soil moderately rich and with clean cultivation, thus giving each and every variety the same opportunity to show its merits.

RASPBERRIES.

Of the newer varieties of raspberries we have tested this year for the first the following :

Lovett's Early. This blackcap has made a very vigorous growth since planted, and this year gave a fair yield of fruit. It proves one of the earliest. Fruits firm and of good size. It gives promise of being a desirable acquisition, but it will need another year's test to be able to decide on its exact merits.

No. 101. A blackcap from Kansas. From the one plant of this variety that fruited the opinion was formed that this would

become one of the best large fruited varieties. The fruits are very large, jet black, with very slight bloom.

Parry No. 1. This is an early red raspberry of rank growth and very dark foliage; fairly productive, soft, but good flavor.

Parry's No. 2. Later than the above by a few days, but a more abundant bearer; not as rank a grower; new canes have a reddish tinge and light green foliage. The berry is of large size, firm and of a distinct flavor. We think this will prove a valuable acquisition, as fruit has been picked from it for a season of forty days.

Quinby's Favorite. This variety resembles Cuthburt in growth of canes, with the exception of being practically thornless. The fruits are very large, deep red and very firm, but the firmness does not detract from the juiciness or flavor, which resembles Cuthburt in a marked degree.

Stayman's No. 5. A very rank growing variety, throwing up a large stool of canes; foliage light green; fruit large, dark red, firm, good flavor. One of the most productive varieties tested.

The earliest blackcap was the Carman, the latest the Ada. The most productive the Hilborn, with Smith's Prolific next.

Of the red varieties, the earliest were Clark and Thompson's Early Pride; the latest, Parry's No. 2, and Miller's Woodland. The most productive, Cuthburt, Muskingum, Shaffers, Clark, Thompson's Early Pride, Stayman's No. 5, Pomona and Genesee, in the order named.

The Caroline, an extremely hardy yellow variety, yielded more than any of the other varieties this year, and the Golden Queen, a Yellow Cuthburt, gave also a large yield. Both of these varieties are of superb flavor but soft and easily damaged because of their color. However, they should be in every private collection. The Shaffer is probably grown more extensively through sections where canning factories have been established than any other variety, as it is of a color that suits, and the yield is very large, growers being able to sell far below the price of the red varieties, and realize a handsome profit. One grower near Geneva picked this season from 2,550 bushes set three by eight feet (less than one and one-half acres) 6,839 quarts, selling at five cents per quart, thus realizing about \$340. These bushes are now in full

bearing, and will probably continue to yield at this rate for several years. For a shipping berry or one to be sold to consumers, the Cuthburt is still in the lead and seems to adapt itself to all localities and soils better than any of the newer varieties. In certain sections the Marlboro is grown with profit. The Clark does fairly well on some soils and is a fine colored and good flavored berry, much sought after for private canning. It and the Thompson's Early Pride will ripen fruit a week ahead of Cuthburt.

Of the blackcaps, probably the Gregg stands at the head, although in some sections is killed back in severe winter weather. It is eagerly sought after by the factories, and good prices are paid for it. It is a good yielder, berries showy and of good size. The same grower spoken of as growing the Shaffer has harvested this year from 2,400 Greggs 2,440 quarts, 1,300 of the plants being in their first year of bearing. The plants were grown three by six feet apart, making about one acre of plants. The fruit sold at canning factory for four cents per quart, about \$100 an acre. The Ohio Souhegan and Palmer have also been planted to quite an extent, and as a berry for drying the Ohio stands at the head.

DISEASES OF THE RASPBERRY.

The raspberry has two troublesome diseases, the blackcap orange-rust and anthracnose. The former is to be dreaded from the fact that the only known remedy for it is to dig up all infested plants and burn them. The anthracnose, which attacks both the blackcaps and the red varieties, can be told by the blotched and cracked appearance of the canes and by the fruits drying up. This is being treated at this Station by a number of fungicides, and at the present writing there seems to be but little doubt but that Bordeaux mixture is having a beneficial action in preventing the spread of this disease.

INSECT ENEMIES OF THE RASPBERRY.

The insects attacking the raspberry are both numerous and troublesome, especially those attacking the canes. The first one to be described is the raspberry root-borer. This differs from the raspberry cane-borer in having sixteen legs, and resembles the peach-borer in its several stages. The moth of this borer has a

body black banded and marked with golden yellow. Its wings when expanded will measure from three-quarters of an inch to an inch across. The eggs are deposited by the female during the hot summer weather on the canes a short distance above the ground. The young larva when hatched eats its way through the cane to the center where it feeds upon the pithy substance. It gradually channels the cane to the root, in which it spends the winter, forming, before the spring, cavities of considerable extent. As the spring opens, it makes its way up again, usually through the interior of another cane, to the height of five or six inches, where the larva, preparing for the exit of the future moth, eats the cane in one place nearly through, leaving only the skin unbroken. When full grown it is about an inch long, of a pale yellow color, with a dark brown head. When the time approaches for the moth to escape, the chrysalis which the borer has become, wriggles itself forward, and, pushing against the thin skin ruptures it, and forcing its way through the opening waits the escape of the moth. The injury done to the root is often followed by the death of the cane, which is sometimes incorrectly attributed to being the result of severe cold of winter. Little can be done with this pest other than uncovering the roots and cutting out the infested portions.

The raspberry cane-borer in its larva state lives in the center of the cane, burrowing downward and often causing the death of the cane. The female moth deposits her egg in June by girdling the young cane near the top in two places, one ring being about an inch below the other and between the rings the cane is pierced and an egg thrust into it. The presence of this enemy is early detected by the sudden drooping and withering of the tips, and by removing all the withered tops down to the lowest ring, so as to insure the removal of the egg, these insects may be kept under.

The tree cricket. Probably this is the most troublesome insect affecting the canes of the raspberry. The female cricket lays her eggs in the autumn by thrusting her long ovipositor obliquely more than half way through the cane, and down the opening thus made she places an egg. A second one is then placed alongside of the first and so on until from five to fifteen eggs are placed in a row. An irregular row of punctures indicates the presence of

the eggs. These punctures weaken the canes, causing them to break very easily. The infested canes should be cut out and burned. The canes can often be told by a partial splitting which indicates the presence of these eggs. These crickets also injure the canes of the blackberry. The raspberry saw-fly, the raspberry apatela and the raspberry plume-moth all attack the leaves, and like all other leaf-eating insects can be subdued by the application of hellebore and water or Paris green.

THE BLACKBERRY.

Of the varieties tested on the Station grounds the Agawam and the Erie have given the best results, the former giving large yields of medium sized fruits, the latter yielding a fair crop of extremely large fruits. Their season is about the same, and, in order to lengthen out the season, it would be better to plant an earlier variety if one can be found that will flourish on the same soil. Next to the above we should place the Snyder, which, in fact, is more generally grown at present than either of the others. The Kittitiny, if hardy and free from rust, would be the perfection of blackberries, but only in a few favored localities can it be grown. The insect enemies of the blackberry are about the same as these of the raspberry, and an extended account of them is not necessary.

CURRENTS.

Of currants, the standard varieties are Fay's Prolific, Cherry and Prince Albert for reds, and the White Dutch and White Grape for whites.

The Fay's Prolific is certainly a very fine variety, growing in a fine compact bush, bearing heavy crops of extra large bunches of very large fruits. On light soils it is far ahead of the Cherry currant, but we have seen the Cherry, growing in heavy clay, when, but for the difference in the foliage, they would have been pronounced Fay's.

The Prince Albert is an excellent late currant, with distinct dark green foliage. The leaves are more pointed than those of any other variety, the fruit stems extra long and the fruit of fair size. The fruit ripens about three weeks later than either Fay's Prolific or Cherry currant, lengthening the season about six weeks, as the fruit hangs on the bushes for a long time before becoming unfit

for use, as the foliage completely covers the bunches. Care should be taken in purchasing this variety, as there is a spurious strain of it in the market with the same foliage and habit of growth, but with short bunches and small fruits. Of the white varieties, the White Grape takes the lead, and, all things considered, is the only one necessary to grow.

INSECT ENEMIES OF THE CURRANT.

The insects attacking the currant are the imported currant-borer, the American currant-borer, the imported currant-worm, the native saw-fly and several others of more or less importance. The two borers are in some sections a serious impediment to successful currant culture. The moth of the imported borer lays its eggs in June, singly, near the buds, where in a few days they hatch into small larva, which eat their way to the center of the stem, where they burrow up and down, feeding on the pith all through the summer, enlarging the channel as they grow older, until at last they have formed a hollow several inches in length. When full grown the larva is whitish and fleshy, with brown head and legs and a dark line along the middle of its back.

When the hollow stems do not break off, indications of the presence of the borer may be found in the sickly look of the leaves and the inferior size of the fruits.

The only remedies are to cut out and burn all hollow canes, or to capture and destroy the moths, who are sluggish in the cool of the morning. The American currant-borer differs from the above in being of smaller size and without feet. Sometimes as many as eight or ten of the borers are found within one cane. The cutting and burning of the infested stalks is recommended in this case as for the imported borer.

The insects attacking the leaves of the currant are the imported and native currant-worm, and the currant span-worm. There are numerous others that commit depredations of minor importance, but these three are all that are likely to be troublesome. The first two can be kept in subjection by the use of powdered hellebore, in the proportion of an ounce of hellebore to a pail full of water, sprinkled or sprayed on the bushes at their first appear-

ance. For the span-worm, if hellebore is used, the liquid should be made three times the usual strength. Paris green is more certain and effectual where there is no objection to its use.

GOOSEBERRIES.

The varieties of gooseberries grown on these grounds comprise both the natives, such as Houghton, Mountain Seedlings and Smith's Improved; and those of foreign blood, as Industry, Triumph, Wellington's Glory and Roesch's Seedling, and at fruiting time the comparison between the two varieties was so marked that they would almost appear as plants of a different species. The foreign varieties have been kept entirely free from mildew this year by the early spraying of the plants, and at the time the fruits were ripe the plants were loaded with clean bright fruits. They were the admiration of all who saw them. The plants gave an average of over ten pounds of fruit, which would make it a profitable crop to grow.

VEGETABLES.

DESCRIPTION OF BEANS.

Of the new varieties of beans tested, the *Aroostook* possesses merit in regard to the large number of pods which each plant produces. These pods make a very good snap bean, and also are well filled with beans of medium size, white.

The *Early Warwick* matures early, furnishing snap beans for a short time early in the season. The beans are dark brown, slightly mottled.

Englefontaine.—A French variety, is very productive, furnishing a large number of snap beans, and maturing a large white bean of fine appearance.

Ronceray.—Green seeded. Also a French variety of very great merit as a snap or string bean. The pods are of good length, broad and very crisp, and continue to develop on the plants for a long period. The beans are long, rather flat, and of a greenish white.

Burpee's Bush Lima.—Plants of this variety made a very vigorous growth, the bushes being of immense size; the leaves are the shape and color of Pole Lima and without the glossy dark

green on the other dwarf varieties. Plants were loaded with bloom and had quite a number of pods containing beans of edible size when killed by frost. In sections where the season is longer it will undoubtedly prove of value.

Jackson's Wonder.—Growth and general appearance of plants identical with Henderson's Dwarf Lima and Dwarf Carolina. Beans same shape and color as the dark type of Dwarf Carolina, but larger. Evidently a selection of that variety.

BUSH BEANS — TABLE OF YIELD.

	Number of pods on ten plants.	Number of beans in 100 pods.
Aroostook.....	255	480
Early Warwick.....	190	525
Englefontaine.....	340	465
Golden-eyed Wax.....	220	505
Rust Proof.....	170	440
Ronceray Green Seeded.....	150	375
No. 40.....	245	480
Dwarf Lima beans:		
Burpee's Bush.....	750	285
Dwarf Carolina.....	1,382	320
Henderson's Dwarf Lima.....	525	290
Jackson's Wonder.....	915	280
Sieva.....	950	285

In an experiment with beans as to the effects of fertilizers, the test has been made as to the susceptibility of the bean to the absence of potash, an old-time theory. It will be seen by the accompanying table of one-twentieth acre plats that the sulphate of potash gave the largest yield, with the plat that received nothing a close second, while muriate of potash, nitrate of soda and bone-black gave practically the same results. As these plats were all given the same treatment last year, it is unlikely that section twelve could have had any advantage in the soil over the balance of the sections, and as sulphate of potash contains a less per cent. of potash than the muriate of potash, it would seem as though the potash does not affect the crop so favorably as has been claimed. This experiment will be continued through a series of years in order to test this matter thoroughly.

FERTILIZER EXPERIMENT WITH BEANS.

PLAT C.	Fertilizer.	YIELD.		Estimate per acre, bushels.
		Pounds.	Ounces.	
Section 9.....	Bone black.....	49	5	18 $\frac{1}{3}$
Section 10.....	Sulphate potash.....	79	6	28
Section 11.....	Nitrate soda.....	61	5	22 $\frac{1}{3}$
Section 12.....	Check.....	67	8	25 $\frac{3}{4}$
Section 13.....	Muriate potash.....	61	....	20 $\frac{1}{3}$

LETTUCE.

Blond Blockhead. — A light yellow variety with edge of leaves scalloped, outside leaves loose ; head spiral, fine yellow leaves and midrib not very solid ; goes to seed slowly.

Burpee's Blockhead. — A cabbage variety ; outer leaves bronzed on edge ; head solid, well blanched ; apt to seed early.

Child's Half Century. — A dark green cabbage lettuce ; very few outer leaves ; heads small and loose, center golden ; very crisp.

Denver Market. — A close growing variety with wrinkled leaves, outer ones light yellow, inner ones white ; heads loose and tender.

Grand Rapids Forcing. — A beautiful fringed variety making very large plants of loose leaves without head ; one of the most showy and quick growing kinds.

Gold Nugget. — A large-leaved variety ; outer leaves loose ; crisp ; seeds early.

Large White Summer Cabbage. — Heads very compact, outer leaves light yellow, heart a beautiful golden color ; crisp and without any bitter taste ; a very fine variety.

New Premium Cabbage. — A low-growing variety ; outer leaves smooth light green ; heads compact and very tender.

Rawson's New Hot-house. — A small rapid-growing variety ; goes to seed too early for summer use, except for extra early.

Paris White Cos. — White Long Standing and Trianon are of the Cos type, and appear to be identical.

All Year Round is a small heading variety with bright yellow leaves, very tender and crisp, but goes to seed very early in the season.

ONIONS.

Seeds of three varieties of onions were sown April 14, primarily to test the benefit of nitrate of soda as a fertilizer. Two of these varieties were from two sources.

Southport Yellow Globe.	Eastern grown seed.
Southport Yellow Globe.	California grown seed.
Southport Red Globe.	Eastern grown seed.
Southport Red Globe.	California grown seed.

These seed were sown on the same day and under identical conditions, but when the young plants appeared it was found that less than five per cent. of the eastern grown seed had germinated, while over ninety per cent of the California grown seed made plants. This is a startling difference, due probably to the eastern grown seed being over one year old. But as the months of April and May were exceptionally dry, the difference may be due to the California seed having more vigor than the eastern grown. As it has been demonstrated at this Station that cabbage and cauliflower seed grown on the western coast often develop larger and more vigorous plants than either eastern grown or imported seed, a comparative germination test of these seeds will be made at an early date. On May sixteenth nitrate of soda was applied to every alternate row of three varieties of onions by scattering it close up to the onion bulb at the rate of about 100 pounds per acre. This amount was applied twice afterward at intervals of thirty days. The results after the second application was very marked, the tops of onions being of a darker green color and of larger size. When these onions were harvested they were weighed with the tops on them and then the tops were cut off and weighed. The results are given in the accompanying table. It will be seen that the nitrate of soda caused a rank growth of tops at the expense of the bulbs, and was of no benefit as far as the merchantable yield was concerned.

ONIONS. TABLE SHOWING RESULTS OF APPLYING NITRATE OF SODA.

	FIRST ROW.—NITRATE OF SODA.		SECOND ROW.—CHECK ROW.		THIRD ROW.—NITRATE OF SODA.		Nitrate of soda. Weight of tops.	Check rows. Weight of tops.	Nitrate of soda. Weight of tops.
	Number of bulbs.	Weight of bulbs.	Number of bulbs.	Weight of bulbs.	Number of bulbs.	Weight of bulbs.			
Prize Taker.....	196	Lbs. 50 Ozs. 12	203	Lbs. 57 Ozs. 8	186	Lbs. 56 Ozs. 8	Lbs. 3 Ozs. 12	Lbs. 1 Ozs. 10	Lbs. 3 Ozs. 1
Southport Yellow Globe.....	104	30 ..	109	32 12	130	32 10	3 8	2 1	3 10
Southport Red Globe.....	205	40 4	192	43 10	134	35 12	3 14	3 ..	3 8

DESCRIPTION OF THE NEWER VARIETIES OF PEAS.

Duke of Edinburg.—The plants grow to the height of five feet; leaves very large, mottled with white; pods three and one-half to four inches long, slightly wrinkled, each pod containing from four to six slightly oblong peas of good quality and large size. Season medium to late.

Heroine.—Plants four feet high, with small dark green foliage; pods usually borne in pairs, strongly recurved, containing an average of seven peas flattened on sides.

Henderson's First of All.—Plants half dwarf; foliage light green; pods borne in pairs, short, usually containing five peas. A good early smooth pea, maturing at one time.

New Giant Podded Marrow.—Plants three feet high; leaves small, light green, slightly mottled; pods usually borne singly, two and one inches long, containing usually six peas of medium size and of rather poor quality.

Shropshire Hero.—Plants three feet high; leaves large, light green; pods usually borne in pairs, strongly recurved, containing six large flattened peas; quality good and plants very productive.

Sutton's Satisfaction.—Plants three feet high; leaves small, light green; pods usually borne in pairs, recurved, containing five peas of very large size, of very fine flavor and quite productive.

The Mayor.—Plants three feet high; leaves small, very dark green; pods borne in pairs, three to four inches long, holding from five to six very large peas, slightly oblong; productive and of fine flavor.

The Don.—Plants four feet; leaves large, light green, mottled; pods borne singly, three inches long, holding five extra large peas slightly flattened on end; quality good.

The Admiral.—Plants four feet; leaves large, light green; pods usually borne singly, holding five small peas very much flattened on end; very productive and fine flavor.

The peas tested this year show renewed energy on the part of originators, either in crossing or by selection, as nearly every variety had merit, and several of them were exceptionally good. I should recommend the following as amongst the best: Admiral and Don for early, Heroine for medium season and the Mayor for late. These will give a six to eight weeks' succession.

PEAS.—TABLE OF YIELD.

	Number of pods on ten plants.	Number of peas in 100 pods.	Date of edible maturity.	Number of days from planting.
Angel's Premier	40	700	June 20	67
Burpee's Quality	97	430	June 22	69
Chelsea	50	580	June 18	65
Champion of England	185	510	July 4	81
Duke of Albany	130	415	June 18	65
Henderson's First of All	50	500	June 13	60
Heroine	50	740	June 25	72
Lightning	60	530	June 15	62
Nott's Excelsior	30	600	June 16	63
New Giant Podded Marrow ..	45	555	June 25	72
Sutton's Satisfaction	85	415	June 26	73
Station	50	450	June 13	60
Shropshire Hero	85	650	June 25	72
The Admiral	70	580	June 15	62
The Don	55	550	June 15	62
The Mayor	45	510	June 29	76

DESCRIPTION OF THE NEWER VARIETIES OF POTATOES.

Arizona.—Medium early; tubers long; skin pink; eyes deep; not productive.

Bill Nye.—Early; tubers long; skin white; eyes near surface; not productive.

Burpee's Extra Early.—Tubers flat; skin white; eyes deep; fairly productive.

Badger State.—Medium late; tubers long; skin white; eyes near surface; very productive.

Chicago Market.—Early; tubers flat; skin pink; eyes near surface; fairly productive.

Dandy.—Early; tubers long; skin white; eyes near surface; fairly productive.

Early Puritan.—Early; tubers rounding; skin pink; eyes deep; fairly productive.

Fill Basket.—Late; tubers long; skin white; eyes deep; one of the most productive.

Freeman.—Extra early; tubers flat; skin white; fairly productive.

Gov. Rusk.—Medium season; tubers flat; eyes deep; fairly productive.

Green Mountain.—Late; tubers long; skin white; eyes near surface; one of the most productive.

Hall's Peachblow.—Late; tubers flat; skin pink; eyes deep; not productive.

Harbinger.—Medium season; tubers long; eyes deep; not productive.

Monroe Seedling.—Late; tubers long; eyes near surface; very productive.

Negro.—Late; tubers long; skin deep purple; eyes near surface; not productive.

New Queen.—Medium season; tubers long; skin white; eyes deep; fairly productive.

Ottawa Rose.—Early; tubers flat; skin pink; eyes deep; fairly productive.

Ohio Junior.—Early; tubers long; skin pink; eyes deep; not productive.

Pride of Ireland.—Late; tubers flat; skin white; eyes near surface; very productive.

Polaris.—Medium season; tubers long; skin white; eyes deep; fairly productive.

Randall's Beauty.—Medium late; tubers flat; skin pink; eyes deep; fairly productive.

Rural Blush.—Medium late; tubers flat; skin pink; eyes pink; very productive.

Snow Queen.—Late; tubers flat; skin white; eyes deep; fairly productive.

Seneca Red Jacket.—Late; tubers long; skin red; eyes deep; very productive.

Seneca Beauty.—Medium late; tubers long, with red skin and deep eyes; productive.

Summit.—Medium early; tubers long, with pink skin and deep eyes; fairly productive.

The Vaughan.—Early; tubers flat, with white skin and deep eyes; fairly productive.

Vick's Champion.—Late; tubers flat, with white skin; deep eyes; productive.

Vick's Early.—Early; tubers long; skin white; eyes deep; not very productive.

Vick's Perfection.—Late; tubers long; skin white; eyes deep; very productive.

White Prize.—Early; tubers long; skin white; eyes deep; not productive.

White Superior.—Medium early; tubers flat; skin white; eyes deep; fairly productive.

Woodbury's White.—Medium early; tubers long; skin white; eyes deep; fairly productive.

Wilson's First Choice.—Medium early; tubers long; skin white; eyes shallow; not productive.

COMPARATIVE TABLE OF YIELD OF THE NEWER VARIETIES OF POTATOES FROM TWO POUNDS OF SEED OF EACH,
CUT INTO TWENTY TWO-EYE PIECES AND PLANTED ONE PIECE IN EACH HILL, HILLS TWO FEET APART,
ROWS THREE FEET

	Number merchantable tubers.	Weight merchantable tubers.		Number small tubers.	Weight small tubers.		Total number of tubers.	Total weight of tubers.	
		Lbs.	Oz.		Lbs.	Oz.		Lbs.	Oz.
Arizona	166	47	5	46	3	4	212	50	9
Bill Nye	193	44	8	47	6	12	240	51	4
Burpee's Ex. Early	163	55	7	66	4	7	229	59	14
Badger State	166	68	8	18	2	2	184	70	10
Chicago Market	174	55	..	48	2	8	222	57	8
Dandy	177	54	..	34	4	13	211	58	13
Early Puritan	180	44	..	68	3	7	248	47	7
Early Market	123	44	14	18	1	3	141	46	1
Fill Basket	142	74	..	10	1	..	152	75	..
Green Mountain	173	88	8	26	2	4	199	90	10
Gov. Rusk	140	49	8	24	3	12	164	53	4
Harbinger	198	40	6	108	5	9	306	45	15
Hall's Peachblow	106	39	10	16	3	..	122	42	10
Monroe Seedling	174	55	..	48	2	8	222	57	8
Negro	243	46	8	44	2	5	287	48	13
New Queen	140	55	..	51	4	2	191	59	2
Ohio Junior	144	45	8	66	4	3	216	49	11
Ottawa Rose	173	39	..	41	3	4	214	42	4
Pride of Ireland	154	50	12	24	1	3	178	51	15
Polaris	163	58	..	62	4	10	225	62	10
Rural Blush	176	69	..	10	1	..	186	70	..
Randall's Beauty	140	53	6	42	2	..	182	55	6

COMPARATIVE TABLE OF YIELD OF THE NEWER VARIETIES OF POTATOES, ETC.—(Concluded).

	Number merchantable tubers.	Weight merchantable tubers.		Number small tubers.	Weight small tubers.		Total number of tubers.	Total weight of tubers.	
		Lbs.	Oz.		Lbs.	Oz.		Lbs.	Oz.
Stray Beauty.....	120	36	2	14	1	4	134	37	6
Snow Queen.....	160	47	8	49	3	8	209	51	..
Seneca Beauty.....	241	58	12	40	3	..	281	61	12
Seneca Red Jacket.....	135	64	..	6	..	10	141	64	10
The Vaughan.....	240	51	10	80	5	..	320	56	10
The Freeman, 1 lb.....	146	25	6	47	..	13	193	26	3
Vick's Champion.....	156	49	12	46	11	6	202	61	2
Vick's Early.....	110	39	..	41	3	4	151	42	4
Vick's Perfection.....	200	69	14	47	2	14	247	52	12
White Superior.....	155	52	12	34	1	12	189	54	8
Woodbury's White.....	175	56	..	34	1	4	209	57	4
Wilson's First Choice.....	189	46	10	32	2	1	221	48	11
White Prize.....	176	42	4	123	6	5	299	48	9

RESULTS OBTAINED BY SPRAYING WITH FUNGICIDES FOR THE
PREVENTION OF POTATO BLIGHT.

On July ninth, before the appearance of blight, spraying experiments were started to note the effectiveness of the two best known and popular fungicides, viz., Bordeaux mixture and ammoniacal solution in their power to keep in check this disease. On that date an application was made of a mixture called liquid copperdine, a manufactured article sent out by one of the leading fertilizing chemists and claimed to be made from the United States Department formula for the ammoniacal solution. After using this mixture it was found by analysis that it was of but one-fourth the strength of the department formula and its further use on potatoes was discontinued and the ammoniacal solution of standard strength used in comparison with Bordeaux mixture. These remedies were applied with a Field Force Pump Company's knapsack sprayer, using a Vermorel nozzle to every alternate fifth row of potatoes, commencing at the first and third row, thus leaving every other row as check. This was done on a plat of White Star potatoes measuring six-tenths of an acre, the application being repeated at intervals of three weeks, with results as given in potato Table No. 1. By the middle of August almost every vine on rows not sprayed showed the effects of blight, while those sprayed either with Bordeaux mixture or ammoniacal solution were green and vigorous. At the time of harvest, the latter part of September, each row that had received treatment could be plainly distinguished.

On July thirty-first a square of thirty-six feet was staked off in the center of a quarter-acre plat of late planted potatoes, and the vines within the square sprayed with Bordeaux mixture three times at intervals of two weeks. By the middle of August the entire plat surrounding this square showed signs of blight, while the sprayed square continued growing. When the main crop of potatoes were harvested this plat was left in order to see how long the vines of the sprayed portion would resist the attack of the fungus. On October sixth the sprayed vines had turned brown and died out but probably from natural causes, as no signs of mildew could be seen. The entire plat was then harvested, and a comparison of the yield of sprayed versus unsprayed vines made in the following manner, the sprayed square containing 288 hills:

seventy-two hills, or one-fourth that number, were staked off on each side immediately surrounding the sprayed square, thus obtaining the same conditions as regards the previous treatment of the soil. The results of this test will be found in potato Table No. 2.

It will be seen that the sprayed portion gave a larger number of both merchantable and small tubers, but a larger per cent. of merchantable than small; also that the sprayed section had less than .29 of one per cent. of decayed tubers against about two per cent. from the unsprayed. The average weight of merchantable tubers from the sprayed section was 6.49 ounces as against 5.74 ounces from the unsprayed, showing that the benefit of spraying lay in keeping the vines in a healthy growing condition until the tubers had obtained their normal size. While the unsprayed section shows a very low per cent. of decayed tubers, the probabilities are that had the conditions that prevailed through July, when the blight made its appearance continued through August and September, a large part of the crop would have been decayed.

Through July the average maximum temperature was 76.5° F., with 3.52 inches of rainfall, conditions favorable to the blight. In August the average temperature was 78.5° F., with but 3.16 inches of rain; and in September the average temperature was 77.8° F., with but .47 inches of rainfall, creating unfavorable conditions for tubers to decay. While in 1890, when a large per cent. of the potato crop of this section decayed, the conditions were entirely different, the average maximum temperature for July being 80° F., for August 77.6° F., for September 69° F., with a rainfall for those months of 1.07 inches for July, 4.34 inches for August, and 5.81 inches for September, making 4.07 inches more rainfall for those three months in 1890 than this year, with an average lower temperature. There is, therefore, but little doubt that the lower temperature, combined with the excessive rainfall of that year, was the active agent in causing the decay of the potato.

The conclusions drawn from this experiment seem to be that spraying with either Bordeaux mixture or ammoniacal solution should be practiced by potato growers. Even in a year of partial exemption from blight it would pay, as Table No. 2 shows an increase of forty-eight bushels per acre on the sprayed section

over the unsprayed. It may be advisable to use the Bordeaux mixture in connection with London purple or Paris green when either of the latter are used for the potato beetle, as it has been discovered that dissolving either Paris green or London purple in the Bordeaux mixture prevents the damage to leaves so often caused by these arsenites, as the lime used in the Bordeaux mixture renders the arsenic insoluble.

The conclusion is also reached by the results obtained in Table No. 1 and by other spraying experiments, that the Bordeaux mixture has given better results this season than the ammoniacal solution.

SPRAYING POTATOES—TABLE NO. 1.

	Average number tubers per row.	Average weight tubers per row.
Bordeaux mixture, rows 1, 5, 9, 13 and 17....	1.038-2	318-1
Check, rows 2, 4, 6, 8, 10, 12, 14, 16, 18, 20....	989-5	286-6
Ammoniacal solution, rows 3, 7, 11, 15, 19....	1.052-0	309-

SPRAYING EXPERIMENT TABLE NO. 2.

Sprayed square of 288 hills.

Number merchantable tubers.	Weight in pounds.	Number small tubers.	Weight in pounds.	Decayed tubers.	Weight in pounds.
1,054	426	226	19	3	1

Unsprayed, 288 hills.

Number merchantable tubers.	Weight in pounds.	Number small tubers.	Weight in pounds.	Decayed tubers.	Weight in pounds.
1,004	360	189	18	20	10

In the table giving the results of fertilizers used on forced tomatoes it will be seen that in both cases where nitrate of soda was used the yield has been the greatest, and where used alone the

best results have been obtained, but the muriate of potash used alone hastened the ripening of fruits above either the nitrate of soda or the combination of nitrate of soda and muriate of potash. But it will also be seen that the muriate of potash gave a larger average weight per individual fruit than the nitrate of soda, and the question of earliness and size of fruits as compared with quantity will have to be taken into consideration in the probable cost of producing and price of selling.

Table giving results of fertilizers used on forced tomatoes:

ATLANTIC PRIZE.

MURIATE POTASH.		NITRATE SODA.		MURIATE POTASH—NITRATE SODA.	
Number of fruits.	Weight in ounces.	Number of fruits.	Weight in ounces.	Number of fruits.	Weight in ounces.
6	16	9	25 $\frac{1}{4}$	14	21 $\frac{3}{4}$
4	16 $\frac{1}{4}$	IGNOTUM. 7 | 23 $\frac{3}{4}$		4	20 $\frac{3}{4}$
9	18 $\frac{1}{4}$	No. 115. 21 | 41 $\frac{1}{4}$		15	32 $\frac{1}{4}$
3	9 $\frac{3}{4}$	LORILLARD. 12 | 15 $\frac{1}{4}$		6	19 $\frac{3}{4}$
22	60 $\frac{1}{2}$	TOTAL FOR ALL PLANTS. 49 | 105 $\frac{1}{2}$		39	94 $\frac{1}{2}$

Number plants.	TOMATO TABLE.	Average number of fruits per plant.	Average weight of fruits.	YIELD FIRST HALF OF SEASON.		YIELD LAST HALF OF SEASON.		First ten fruits ripe.
				Number of fruits.	Weight of fruits.	Number of fruits.	Weight of fruits.	
			Ounces.	Lbs.	Ozs.	Lbs.	Ozs.	
5.....	Atlantic Prize.....	52	5½	164	59	106	34	August 20
4.....	Chemin.....	68	4½	80	25	195	60	August 29
5.....	Cook's Favorite, No. 9.....	168	2½	98	14	741	100	August 29
5.....	Cook's Favorite, No. 10.....	135	2½	108	16	576	80	August 29
5.....	Cumberland.....	77	5½	57	24	329	110	September 8
3.....	Dwarf Champion.....	46	4½	15	4	131	32	September 8
5.....	Ignotum.....	45	7½	28	13	200	88	September 8
4.....	Mansfield Tree.....	38	8½	26	5	167	92	September 11
4.....	Mitchell's New.....	78	6½	25	12	301	111	September 8
4.....	Matchless.....	55	5½	17	7	208	78	September 3
5.....	No. 115.....	124	3½	224	53	396	84	September 29
4.....	No. 1.....	85½	5½	195	67	232	63	August 29
4.....	No. 400.....	16½	11½	5	4	79	67	August 14
5.....	Potomac.....	49	7¾	43	29	202	96	September 8
5.....	Table Queen.....	32	6½	42	16	110	43	September 3

It will be seen by this table that the heaviest individual fruits were produced by the No. 400. The largest yield of fruit per plant was from the Cook's Favorite No. 9. The earliest ten fruits from Atlantic Prize, which variety also ripened the largest part of its crop in the first-half of the fruiting season. The heaviest yield of fruits per plant was from the Mitchell's New.

DESCRIPTION OF NEW VARIETIES OF TOMATOES.

Mansfield Tree.—The vines of this variety grow very rank, and if trained to a stake might be called a tree, but with no more accuracy than many other varieties. The fruits are very large, of light purple color, very much flattened and wrinkled; flesh meaty. Not a desirable variety for market, the fruits being too large and not smooth enough to slice.

Mitchell's New.—Early, quite productive, and of medium vigor; fruits quite flat on blossom end; quality good.

No. 400.—Growth of vine vigorous; season late; moderately productive; fruits of the largest size, very symmetrical, purple in color; flesh firm.

Potomac.—Growth vigorous; moderately productive; fruits large symmetrical, blossom end flat, of a pleasing red; flesh firm and of fine quality.

Report of Farmer and Acting Pomologist.*

Nearly the entire time throughout the year has been given to routine work in orchards and on the general farm. The employment of and superintendence of the labor has been one of the duties of this department. Some of the more important work for the season in the line of improvement was the grading around the new laboratory and the laying of a vitrified tile sewer from the building to the creek, a distance of about sixty rods. Part of the way it was necessary to excavate about seven and one-half feet in order to secure a uniform grade. A gravel road was built through the orchard, extending from those already completed around buildings to the highway on the west of the farm and a turn made, giving visitors an opportunity to drive through orchards.

The farm proper embracing fields south of creek not divided into plats for experiment has been devoted to crops best suited to furnish grain and forage that can be used to the greatest advantage in feeding experiment cattle and work horses. The rotation for the most part consists of corn, forage crops, oats and hay. Wheat is excluded from the rotation except for test of varieties, or when a failure of seeding occurs with oats, owing to drought.

A field in sod containing eleven acres was fitted for and planted to corn on June tenth and eleventh, the severe spring drought which prevailed through this section rendering it impossible to get ground in condition earlier. From the west end of this field twenty-one plats were laid off containing one-fourth acre each and devoted to experiments with four leading brands of fertilizers. The results were negative in character; in no case did the increased yield of crop pay for the cost and application of the fertilizer. The field will be sown to oats in the spring and the after effects of the fertilizer noted.

* G. W. Churchill.

They will be given with the data obtained during the season of 1891. The yield of corn on this field was about ten tons per acre as cut for silo. It was harvested on the thirtieth of September, October first, second and third, 106 tons in round numbers being cut and packed in silo. Although the corn was planted later than it was considered possible to secure a crop of corn in this latitude, it fully matured and made exceptionally fine silage.

The field of alfalfa of about two acres sown for forage, although on some of the poorest land on the Station farm and badly seeded with narrow leaf plantain, furnished a good supply of very palatable and nutritious forage, being cut three times during the summer. The plant gives promise of standing the winter well, and is in much better condition than in the fall of previous year.

The small field of prickly comfrey, also on poor ground and not manured, has furnished green feed for seven bulls the greater part of the summer.

Oats and Canada peas were sown in succession to complete the soiling of the season. At the close of this year's work in soiling we are led to believe that we can maintain our animals on alfalfa, oats and peas and corn cheaper than on any combination of forage plants we have tested at this Station. If we were to recommend any crop in addition for this purpose, it would be rye sown in the fall for one cutting.

LARGE FRUITS.

APPLES.

The older grafts in the experiment orchard failed to fruit except in a few cases and these the older and well-known varieties like Keswick, Codlin, Primate and Ben Davis. The newer varieties grafted in 1888; and those in each year since to the present date are in a very promising condition of growth, but have not come to sufficient maturity to bear fruit.

Toward the close of September some of the largest seedling orchards in the State were visited with a view of obtaining some data as to the value of native wild fruit for improvement and cultivation. Many hundreds of these trees were inspected, the color, size and flavor of the fruits noted, and from these thirty-two were selected as worthy of further note and study. Specimens

of the fruit were selected and brought to the Station and placed on exhibition. Many of the seedlings resembled well-known named varieties of apples in general cultivation, and nurserymen and fruit growers named many of the specimens from their close resemblance to such well-known sorts as Spitzenburgh, Northern Spy, Fallwater, Greening, Maiden's Blush, etc.

Cions of the thirty-two from which fruit was selected have been secured and placed in safe-keeping for grafting in bearing trees the coming spring. The object of this work is not only to test these seedlings for the qualities which they may possess in themselves, but also for work in cross-fertilization with named varieties in cultivation, growing of seedlings from vigorous native stocks, and such other work as may be suggested in the future tending toward the improvement of our varieties of the apple. The results of this work can not be obtained in one season or perhaps in one lifetime, but we believe it to be in one of the most promising lines of effort for the improvement of the apple, and reports of progress will be given in the future as the work progresses.

PEACH, PLUM, APRICOT.

Of these fruits but few of the newer varieties have been set long enough to bear sufficient fruit to warrant a report as to their probable value for general cultivation. As in the case of the apples first grafted at the Station many of the varieties are of the older ones in cultivation and were planted as standards by which to judge of the value of new varieties as they come into bearing. Many of these produced a full crop of fruit the past season. Rollingstone, Robinson, Potawatamie, Weaver and other of the native varieties of plum bore several specimens of fruits, but aside from their appearance, which is very attractive, they are of doubtful value for general culture in this locality. The same is true of the Russian apricots so far as tested.

DESCRIPTIONS OF SOME OF THE NEWER VARIETIES OF GRAPES.

Adirondack.—Clusters few, medium size, not shouldered; berries nearly round, medium, not as large as Concord, black; skin of medium thickness, firm, does not crack, light bloom; pulp yellowish white, melting, separating readily from seeds; seeds two to

three; flavor peculiar, suggests the odor of port wine. Did not mildew.

Amber.—Not ripe September twenty-one.

Ambrosia.—Not fully ripe September twenty-one. Clusters few, small, short, not shouldered; berry roundish, flattened, quite large, white; skin medium thickness, does not crack, white bloom; flesh yellowish white, somewhat tough at center; flavor pleasant subacid; two to three quite large seeds.

Aledo.—Not ripe September twenty-one.

Arnold's No. 16.—Not fully ripe September twenty-one. Cluster not shouldered, small; berries nearly round, small, about like Clinton, black; skin thin, bloom lighter than berry; flesh green, texture medium, tender; flavor subacid; two medium-sized seeds. Did not mildew.

Black Eagle.—Cluster long, sometimes shouldered, quite large; berries longish, elongated, small to medium, largest not larger than Hartford, black; skin quite thin, with medium bloom; flesh green, yielding, separating easily from seeds of which there are from two to four; flavor pleasant, quite acid. Did not mildew.

Beagle.—Clusters medium, not shouldered, quite short and compact; berries nearly round, medium to small, black; skin rather thick, reddish purple on inside, very sweet when chewed, heavy bloom; flesh pinkish, rather firm, pulp inclined to meaty, pleasant subacid flavor; two to three medium-sized seeds. Did not mildew.

Brighton.—Cluster medium, compact, sometimes shouldered, medium to large; berries nearly round, size of Concord, reddish purple; skin of medium thickness, colors the fingers when bruised, bloom quite abundant; flesh whitish, quite yielding, separates readily from seeds, flavor pleasant but peculiar when pulp is broken; seeds two to six. Did not mildew.

Caywood No. 50.—Cluster compact, not shouldered, medium size; berries nearly round, size of Hartford, black; skin medium, heavy bloom. Not diseased.

Clevener.—Cluster medium, sometimes shouldered; berries small, nearly round; skin quite firm, colors the hands when broken, quite thin bloom; reddish purple flesh, quite firm, meaty, flavor like parent riparia; three to four medium-size seeds.

Clinton.—Cluster medium, shouldered, small; berries nearly round, small; clings well to pedicle; skin very thin, quite heavy bloom; flesh green on outside, purplish around seeds, firm, stringy, flavor like parent; one to three medium-size seeds. A little powdery mildew.

Cottage.—Cluster quite large, shouldered; berries nearly round, quite large, larger than Concord; color black; skin thick, very heavy bloom; flesh pinkish, tough but not stringy, flavor very pleasant, subacid when pulp is broken; three to four quite large seeds.

Croton.—Cluster long, shouldered, quite large size; berries slightly elongated but small; leaves somewhat rusted; color pinkish white; skin very thin, bloom quite light; flesh green, tender, and very melting and separates readily from the seed; flavor very pleasant, vinous if not rich; one to two seeds.

Creveling.—No fruit. A little anthracnose.

Daisy.—Cluster small, inclined to be loose; berries medium size, elongated like Isabella, color red; skin medium thickness; flesh whitish green, tough, does not separate readily from seed; flavor slightly foxy; seeds two to three, quite large. No disease.

Delaware.—No fruit.

Dracut Amber.—Cluster quite short and compact, not shouldered, small to medium; berries of medium size, roundish and a little elongated, color dark amber; skin very thick and meaty, impresses one as of more substance than the pulp; flesh greenish white, rather firm, does not separate easily from pulp, a little foxy; seeds three to four, quite large. No disease.

Early market.—Cluster medium size, quite compact; berries nearly round, small like Clinton, of black color; does not cling very well to pedicle; skin medium thick; flesh green, flavor very pleasant, sweeter than most of the wine grapes; two to three seeds, quite small. No disease.

Eldorado.—Clusters too imperfect to describe, very roundish, very much flattened, color yellowish white; skin quite thick, bloom scant; color of flesh whitish, very tender, separates from seeds readily, very pleasant, no foxiness; two to three seeds of medium size. No disease.

Elsingburgh.—No fruit.

Elvibach.—Cluster medium, compact, quite long, not shouldered berries nearly round, medium size, color black; skin medium thick, bloom quite heavy; flesh greenish, quite firm, wine flavor; two to three seeds. No disease.

Elvira.—Not quite ripe September twenty-one. Cluster very compact, quite short, often shouldered; berries nearly round, a little flattened, medium size, color white; skin medium thick; little bloom; color of flesh green; three to four seeds, good size. No disease.

Etta.—Not quite ripe September twenty-one. Cluster very compact, full square at the base, medium to large; berries nearly round, as large as Hartford, color greenish white; skin quite thin, little bloom; color of flesh greenish, texture quite yielding, separates from seed readily, flavor vineous; seeds, three to four. No disease.

Faith.—Cluster quite long, not shouldered, of medium size; berries nearly round, small, about like Jessica, yellowish or straw color; skin medium thick, with slight bloom; flesh white, fairly yielding, quite pleasant; seeds three, small.

Gärtner.—See Massasoit.

Geneva.—Cluster medium long, rarely shouldered, of medium size; berries of medium size, inclined to oblong; color white, inclining to golden when fully ripe; skin medium thick with light bloom; color of flesh greenish white, separates quite well from seed, flavor fair; two to three seeds of medium size.

Gov. Ireland.—No fruit.

Grein's Golden.—Not fully ripe September twenty-one. Cluster rather loose; berries a little oblong, medium to large size, color red, same as Lindley; skin quite thick with slight bloom; color of flesh greenish; three to four seeds, quite large.

Greyson.—No fruit.

Janesville.—Ripens about with Moore's Earley. Cluster quite short and compact, sometimes shouldered; berries nearly round, about the size of Hartford, of black color; skin quite thick with heavy bloom; color of flesh dark red, around seeds, very firm, not softening when dead ripe; flavor very indifferent and quite acid when pulp is broken; three or four seeds of medium size. No disease.

Jewell.—No fruit.

Little Blue.—No fruit.

Mabel.—Clusters medium size and compact; berries round, averaging small, black color; skin quite thin, light bloom, color of flesh whitish, separates from seeds freely, wine flavor; two to three seeds of medium size. Free from disease.

Marion.—Cluster quite compact, shouldered; berries nearly round, medium size and of dark color; skin medium thick, with quite heavy bloom; color of flesh dark red, purplish around seeds, somewhat tough, does not separate easily, wine flavor; two to three seeds of good size.

Massasoit.—Cluster compact, sometimes shouldered, or large size; berries large and nearly round, red color; skin quite thin for so large a berry; color of flesh greenish white, quite melting, separates easily from seed, flavor good, resembling somewhat Salem; three to four large seeds. This variety resembles Gartner in every respect.

Maxatawney.—Not ripe September twenty-six.

Merrimac.—Cluster medium size, compact but not shouldered; berry black, nearly round, and large; skin very thick, with heavy bloom; color of flesh whitish; pink around seeds, texture quite tough, separates indifferently, quite acid; two to three seeds, very large.

Metterny.—No fruit.

Missouri Reissling.—Cluster medium size, good length, sometimes shouldered; berries white, medium size, nearly round; skin quite thin, with slight bloom; color of flesh whitish, texture quite good, sprightly flavor; two to three seeds of medium size.

Nectar.—Cluster of medium to large size, quite long and compact, shouldered and double shouldered; berries black, of medium size and nearly round; skin medium thick with very heavy bloom; color of flesh yellowish white, texture very good when fully ripe, pleasant flavor; two to three quite large seeds.

Noah.—Cluster of medium size, sometimes shouldered; berries greenish, turning to yellowish white in sun, medium size and nearly round; skin quite thick, with little bloom; color of flesh greenish white, texture hard, flavor quite acid but sprightly; two to three seeds of medium size.

Northern Muscadine.—Clusters small, rather short and compact; berries reddish purple, medium size, and nearly round; skin thick, with slight bloom; color of flesh whitish, texture quite melting, flavor foxy; two to three seeds of medium size.

Olita.—Cluster long, quite loose; berries greenish white, small and nearly round; skin medium thick, with slight bloom; color of flesh greenish white, texture very yielding, dissolves in mouth, hardly any appearance of pulp, flavor pleasant, a little acid; two to three small seeds.

Red Bird.—Cluster quite long, sometimes shouldered; berries reddish purple, quite large, nearly round, a little flattened; skin thick, with thin bloom; color of flesh greenish white, texture quite firm, flavor foxy; two to three seeds of medium size.

Red Eagle.—Cluster inclined to long, not shouldered; berries dark red, of medium size and nearly round; skin quite thick, with heavy bloom; color of flesh yellowish white, texture quite good, separates readily; flavor very good, some foxiness; two to three seeds of medium size; a little mildew.

Pearl.—Not ripe September twenty-six.

Poughkeepsie.—Cluster quite long, not shouldered; berries red, nearly round, slightly larger than Delaware, quite heavy bloom; color of flesh, greenish white, texture very yielding, separates very readily, flavor sweet and sprightly; two to three seeds very small.

Profitable.—Cluster large, quite long, shouldered; berries greenish red, round, inclined to oblong; skin quite thick, with heavy bloom; color of flesh greenish white, texture very good, separates quite readily, flavor not pleasant; three to four seeds of medium size.

METEOROLOGY FOR 1891.*

The record of all the wind strong enough to turn a vane has been recorded accurately as to the direction and time.

The record of sunshine has been continued uniform with the first method adopted by Dr. Babcock, and a summary follows the record for 1891, showing a comparison of the sunshine for each year it has been recorded by the Neggretti and Zambra instrument.

The different tables follow in their order:

WIND RECORD FROM MARCH TO JUNE, 1891.

DATE.	MARCH.				APRIL.				MAY.				JUNE.			
	N.E. to N.W.	Easterly S.E.	Southerly S.E. to S.W.	S.W. to N.W.	Northerly N.E. to N.W.	Easterly N.E. to S.E.	Southerly S.E. to S.W.	Westerly S.W. to N.W.	Northerly N.E. to N.W.	Easterly N.E. to S.E.	Southerly S.E. to S.W.	Westerly S.W. to N.W.	Northerly N.E. to N.W.	Easterly N.E. to S.E.	Southerly S.E. to S.W.	Westerly S.W. to N.W.
1.....	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.
2.....	2.0	3.5	18.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3.....	6.0	2.0	2.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4.....	.....	22.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5.....	.....	19.0	4.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
6.....	.....	.....	24.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7.....	.....	.....	17.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8.....	.....	3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9.....	.....	4.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10.....	.....	24.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11.....	.....	16.0	20.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12.....	.....	24.0	4.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14.....	.....	3.5	20.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15.....	.....	.....	24.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16.....	.....	10.0	14.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
17.....	.....	3.0	16.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18.....	.....	24.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19.....	22.0	1.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20.....	6.0	12.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
21.....	.....	13.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
22.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
23.....	23.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
24.....	.....	.....	7.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
25.....	16.0	.....	6.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
26.....	11.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
27.....	.....	7.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
28.....	.....	10.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
29.....	5.0	7.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30.....	12.0	.....	19.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
31.....	2.0	3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total hours of movement.....	110.0	35.0	194.5	90.0	176.0	5.0	176.0	333.5	106.0	18.0	85.0	259.5	140.0	24.0	143.0	169.0
Per cent. of time in each direction.....	20.0	6.4	35.4	14.9	29.1	.8	29.1	55.2	22.6	3.8	18.2	55.4	29.4	5.0	30.1	35.5

WIND RECORD FROM JULY TO SEPTEMBER, 1891.

DATE.	JULY.				AUGUST.				SEPTEMBER.			
	N.E. to N.W.	Easterly N.E. to S.E.	Southerly S.E. to S.W.	Westerly S.W. to N.W.	Northerly N.E. to N.W.	Easterly N.E. to S.E.	Southerly S.E. to S.W.	Westerly S.W. to N.W.	Northerly N.E. to N.W.	Easterly N.E. to S.E.	Southerly S.E. to S.W.	Westerly S.W. to N.W.
1.....	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.
2.....	6.0	.....	6.0	.....	.....	5.0	8.0	.....	.....	6.0	5.0
3.....	13.0	2.0	10.0	.....	.....	4.0	.....	.....	17.0	.....
4.....	24.0	.....	9.0	.....	6.0	.....	.....	.....	17.0	8.0
5.....	4.0	20.0	3.0	8.0	.....	.....	.....	.....	12.0	.....
6.....	24.0	.....	.....	5.0	.....	13.0	.....	14.0	.....
7.....	24.0	9.0	.....	.....	.....	.....	6.0	.....	.....
8.....	3.0	8.0	3.0	3.0	.....	2.0	.....	.....	.....	19.0
9.....	2.0	13.0	.....	.....	5.0	13.0	3.0	.....	.....	19.0
10.....	9.0	.....	.....	3.0	6.0	.....	.....	.....	20.0
11.....	4.0	4.0	.....	3.0	9.0	.....	3.0	6.0	15.0
12.....	11.0	3.0	.....	5.0	.....	1.0	.....	.....	4.0	2.0
13.....	12.0	1.0	.....	.....	.....	13.0	.....	.....	13.0	.....
14.....	2.0	10.0	.....	.....	.....	22.0	.....	.....	19.0	2.0
15.....	6.0	5.0	3.0	.....	3.0	.....	1.0	.....	.....	19.0
16.....	9.0	12.0	.....	.....	4.0	8.0	.....	.....	4.0	11.0
17.....	24.0	3.0	.....	.....	6.0	3.0	.....	5.0	15.0
18.....	8.0	6.0	2.0	.....	3.0	3.0	2.0	.....	9.0	3.0
19.....	17.0	.....	.....	.....	20.0	.....	.....	.....	3.0	17.0
20.....	7.0	14.0	8.0	3.0	.....	.....	6.0	.....	.....	18.0
21.....	2.0	.....	6.0	5.0	2.0	9.0	.....	.....	.....	6.0	.....
22.....	2.0	.....	.....	20.0	.....	.....	2.0	.....	5.0
23.....	9.0	.....	.....	.....	3.0	14.0	2.0	.....	.....	.....
24.....	24.0	.....	4.0	.....	4.0	4.0	8.0	.....	.....	6.0
25.....	14.0	.....	5.0	.....	.....	2.0	4.0	.....	5.0	1.0
26.....	22.0	.....	.....	7.0	15.0	.....	.....	5.0	.....
27.....	2.0	17.0	.....	.....	5.0	4.0	.....	.....	.....	.....
28.....	16.0	.....	4.0	8.0	.....	5.0	.....	4.0	.....
29.....	8.0	8.0	.....	2.0	3.0	7.0	.....	.....	14.0	.....
30.....	7.0	3.0	.....	.....	.....	21.0	.....	.....	22.0	2.0
31.....	23.0	.....	.....	.....	.....	3.0	5.0	.....	.....	12.0
.....	16.0	.....	.....	14.0	.....	.....	.....	.....	.....
Total hours of movement.....	41.0	8.0	205.0	279.0	68.0	27.0	138.0	161.0	58.0	15.0	186.0	225.0
Per cent. of time in each direction.....	7.7	1.5	38.5	62.3	17.3	6.9	35.0	40.8	12.0	3.1	38.4	46.5

REPORT OF ACTING METEOROLOGIST OF THE

SUMMARY OF DIRECTION OF WIND FOR 1890-91.

	Northerly, N.W. to N.E.	Easterly, N.E. to S.E.	Southerly, S.E. to S.W.	Westerly, S.W. to N.W.
November	90.0	7.0	172.5	228.5
December	122.0	32.0	148.5	283.5
January	82.5	23.0	175.0	276.0
February	66.0	23.5	241.5	179.0
March	110.0	35.0	210.0	194.5
April	90.0	5.0	176.0	333.5
May	106.0	18.0	85.0	259.5
June	140.0	24.0	143.0	169.0
July	41.0	8.0	205.0	279.0
August	68.0	27.0	138.0	161.0
September	58.0	15.0	186.0	225.0
October	63.0	23.0	145.0	249.0
November	41.0	9.0	311.0	245.0
December	20.0	22.0	202.0	313.0
Total hours	1097.5	271.5	2638.5	3395.5
Per cent. of time from each direction	15.0	3.7	34.8	46.5

SUNSHINE RECORD FOR 1891 BY NEGRETTI AND ZAMBRA INSTRUMENTS.

DATE.	JANUARY.					FEBRUARY.						
	Before 9 A. M.	9 to 12.	12 to 3.	After 3 P. M.	Total hours.	Hours, sunrise to sun- set.	Before 9 A. M.	9 to 12.	12 to 3.	After 3 P. M.	Total hours.	Hours, sunrise to sun- set.
	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.
1.....	0 00	0 00	0 00	0 00	0 00	9 08	0 00	0 00	0 00	0 00	0 00	10 00
2.....	0 00	0 00	0 00	0 00	0 00	9 09	0 00	0 00	0 00	0 00	0 00	10 02
3.....	0 00	0 30	0 00	0 30	0 30	9 10	0 00	0 00	0 00	0 00	0 00	10 04
4.....	0 00	0 00	0 00	0 00	0 00	9 11	1 00	0 00	0 00	0 00	0 00	10 07
5.....	0 00	0 00	0 00	0 00	0 00	9 12	1 00	3 00	0 00	2 00	0 00	10 09
6.....	0 00	0 00	1 45	0 30	2 15	9 14	1 00	3 00	0 00	0 00	0 00	10 12
7.....	0 00	3 00	3 00	0 30	6 30	9 15	0 00	0 00	0 00	0 00	0 00	10 14
8.....	0 45	3 00	3 00	0 30	7 35	9 16	0 00	0 00	0 00	0 00	0 00	10 17
9.....	0 00	3 00	3 00	0 45	7 15	9 17	0 00	0 00	0 00	0 00	0 00	10 19
10.....	0 00	3 00	3 00	1 15	7 45	9 18	0 00	1 30	3 00	0 00	0 40	10 21
11.....	0 00	3 00	3 00	0 00	0 00	9 19	1 10	3 00	3 00	1 00	0 30	10 24
12.....	0 00	0 00	0 00	0 00	0 00	9 22	0 00	2 00	1 00	0 00	0 00	10 27
13.....	0 00	2 00	3 00	0 00	5 00	9 23	0 00	3 00	1 00	0 00	0 00	10 31
14.....	0 00	3 00	1 45	0 00	3 45	9 24	0 00	3 00	3 00	0 00	0 00	10 35
15.....	1 15	3 00	1 00	0 00	5 15	9 26	1 15	3 00	3 00	1 00	0 00	10 37
16.....	0 00	0 00	3 00	1 00	4 00	9 27	0 00	0 00	0 00	0 00	0 00	10 41
17.....	0 00	0 00	2 00	0 00	2 00	9 29	0 00	0 00	0 00	0 00	0 00	10 43
18.....	0 00	0 00	0 00	0 00	0 00	9 30	0 00	0 00	0 00	1 00	0 00	10 46
19.....	0 00	0 00	0 00	0 00	0 00	9 33	0 00	0 00	0 00	2 00	0 00	10 49
20.....	0 00	0 00	1 00	1 30	2 30	9 35	0 00	0 00	0 00	0 00	0 00	10 52
21.....	1 00	3 00	0 00	0 00	4 00	9 36	0 00	0 00	0 00	0 00	0 00	10 55
22.....	0 00	0 00	0 00	0 00	0 00	9 38	1 15	3 00	3 00	1 30	0 00	10 58
23.....	1 00	3 00	0 00	0 00	4 00	9 41	1 00	3 00	0 00	0 00	0 00	11 01
24.....	0 00	0 00	0 00	0 00	0 00	9 42	1 00	3 00	0 00	0 00	0 00	11 04
25.....	0 00	0 00	0 00	0 00	0 00	9 44	0 00	0 00	0 00	0 00	1 00	11 06
26.....	0 00	0 00	0 00	0 00	0 00	9 46	0 00	0 00	1 00	0 00	3 30	11 10
27.....	0 00	0 00	3 00	1 30	4 30	9 49	0 00	3 00	0 00	0 00	4 00	11 12
28.....	0 00	0 00	0 00	0 00	0 00	9 51	1 00	3 00	0 00	0 00	0 00	11 12
29.....	0 00	0 00	0 00	0 00	0 00	9 53	..	..	..	..	..	..
30.....	0 00	0 00	0 00	0 00	0 00	9 56	..	..	..	..	..	..
31.....	0 00	0 00	0 00	0 00	0 00	9 58	..	..	..	..	..	..
Total hours.....	6 00	31 00	32 30	8 20	77 50	294 12	9 40	42 30	33 30	11 10	96 50	296 05
Per cent. of possible	12.2	33.3	34.9	14.1	26.5	...	16.8	50.6	39.9	15.9	32.7	...

SUNSHINE RECORD—(Continued).

DATE.	MARCH.						APRIL.					
	Before 9 A. M.	9 to 12.	12 to 3	After 3 P. M.	Total hours.	Hours, sunrise to sun- set.	Before 9 A. M.	9 to 12	12 to 3	After 3 P. M.	Total hours.	Hours, sunrise to sun- set.
	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.
1.....	1 00	3 00	3 00	1 20	8 20	11 15	0 00	2 00	0 00	0 00	2 00	12 42
2.....	0 00	3 00	3 00	1 00	4 00	11 17	0 00	0 00	0 00	0 00	0 00	12 46
3.....	0 00	2 15	3 00	0 00	5 15	11 20	0 00	0 00	0 00	0 00	0 00	12 48
4.....	1 30	3 00	3 00	1 00	8 30	11 23	0 00	0 00	0 00	0 00	0 00	12 51
5.....	0 00	0 00	0 00	0 00	0 00	11 25	1 30	3 00	3 00	2 00	9 30	12 54
6.....	1 00	3 00	2 00	0 00	6 00	11 31	1 30	3 00	3 00	1 30	9 00	12 56
7.....	0 00	0 00	1 00	0 00	1 00	11 31	1 00	3 00	3 00	1 45	8 45	12 59
8.....	0 00	0 00	0 00	0 00	0 00	11 33	0 30	3 00	3 00	1 00	7 30	13 02
9.....	0 00	0 00	0 00	0 00	0 00	11 36	1 00	3 00	3 00	0 30	7 30	13 04
10.....	0 00	2 00	3 00	2 00	7 00	11 39	0 00	0 00	0 00	0 00	0 00	13 08
11.....	1 30	3 00	3 00	1 00	8 30	11 42	0 00	0 00	0 00	0 00	0 00	13 11
12.....	0 00	0 00	0 00	0 00	0 00	11 45	0 00	0 00	0 00	0 00	0 00	13 13
13.....	0 00	2 30	3 00	0 00	3 00	11 48	1 00	3 00	3 00	1 30	8 30	13 16
14.....	1 30	3 00	3 00	1 00	8 30	11 51	1 30	3 00	3 00	0 00	7 30	13 19
15.....	1 15	3 00	3 00	1 30	8 45	11 53	1 00	0 00	0 00	0 00	0 00	13 21
16.....	0 30	2 00	3 00	1 00	5 00	11 56	1 30	3 00	3 00	0 00	7 30	13 24
17.....	1 30	3 00	3 00	2 00	9 30	12 00	0 00	0 00	0 00	0 00	0 00	13 27
18.....	1 45	3 00	3 00	0 00	6 15	12 03	0 00	0 00	0 00	0 00	0 00	13 30
19.....	1 30	3 00	3 00	2 00	9 30	12 05	0 00	1 00	1 45	0 00	3 45	13 33
20.....	0 00	0 00	0 00	0 00	0 00	12 08	1 30	3 00	3 00	0 00	7 30	13 35
21.....	0 00	0 00	0 00	0 00	0 00	12 11	1 30	3 00	3 00	1 00	8 30	13 38
22.....	0 00	0 00	0 00	0 00	0 00	12 14	0 00	1 00	2 00	1 30	4 30	13 40
23.....	0 00	0 00	0 00	0 00	0 00	12 16	0 00	0 00	1 00	0 00	1 00	13 43
24.....	1 30	3 00	3 00	2 00	9 30	12 19	1 30	3 00	3 00	1 45	9 15	13 45
25.....	1 45	3 00	3 00	2 00	9 45	12 22	1 45	0 00	0 00	0 00	1 45	13 48
26.....	1 30	3 00	3 00	2 00	9 30	12 25	1 45	3 00	3 00	2 15	10 00	13 50
27.....	0 00	0 00	0 00	0 00	0 00	12 27	0 00	3 00	3 00	2 30	8 30	13 54
28.....	1 30	3 00	3 00	2 00	9 30	12 30	1 45	3 00	3 00	2 30	10 15	13 56
29.....	1 00	3 00	3 00	2 00	9 00	12 33	1 00	3 00	3 00	2 00	9 00	13 59
30.....	1 30	3 00	3 00	2 00	9 30	12 36	1 00	3 00	3 00	2 30	9 30	14 01
31.....	0 00	0 00	0 00	0 00	0 00	12 39	..	..	..	..	..	..
Total hours.....	21 45	56 45	52 30	24 50	155 50	370 10	20 45	52 00	52 45	25 15	150 45	401 13
Per cent. of possible.....	24.8	61.0	56.5	25.7	42.1	.....	20.7	57.8	58.6	22.8	33.4	.....

SUNSHINE RECORD — (Continued).

DATE.	MAY.						JUNE.					
	Before 9 A. M.	9 to 12.	12 to 3.	After 3 P. M.	Total hours.	Hours, sunrise to sun- set.	Before 9 A. M.	9 to 12.	12 to 3.	After 3 P. M.	Total hours.	Hours, sunrise to sun- set.
	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.
1.....	1 00	2 00	1 00	0 00	4 00	14 06	1 30	2 30	2 00	1 30	7 30	15 05
2.....	0 00	0 00	2 00	0 00	3 00	14 08	0 00	0 00	0 00	0 00	0 00	15 06
3.....	0 00	0 00	0 00	1 00	1 00	14 11	0 00	0 00	1 00	0 00	1 00	15 08
4.....	0 00	0 00	0 00	0 00	0 00	14 13	0 00	0 00	3 00	1 30	4 30	15 09
5.....	0 00	0 00	0 00	0 00	0 00	14 15	1 30	3 00	3 00	2 00	9 30	15 09
6.....	0 00	0 00	0 00	0 00	4 45	14 17	0 00	0 00	0 00	0 00	0 00	15 10
7.....	1 00	2 00	2 00	0 00	5 00	14 20	0 00	3 00	3 00	2 00	8 30	15 11
8.....	1 00	3 00	2 00	0 00	6 00	14 22	0 30	3 00	3 00	2 15	9 45	15 12
9.....	1 40	3 00	3 00	0 00	10 10	14 25	1 45	3 00	3 00	2 30	10 15	15 13
10.....	1 15	3 00	3 00	2 30	9 45	14 27	2 00	3 00	1 00	0 30	6 30	15 14
11.....	0 00	0 00	0 00	0 00	0 00	14 29	2 00	3 00	3 00	2 30	10 30	15 15
12.....	2 00	3 00	3 00	2 00	10 00	14 31	2 15	3 00	3 00	3 00	12 00	15 15
13.....	1 30	3 00	3 00	2 00	9 30	14 33	3 00	3 00	3 00	3 15	12 25	15 16
14.....	1 00	3 00	3 00	0 00	7 00	14 35	3 15	3 00	3 00	3 15	12 30	15 16
15.....	0 00	3 00	1 30	0 00	4 30	14 37	2 30	2 00	0 00	0 00	4 30	15 17
16.....	0 00	3 00	0 00	0 00	3 00	14 39	2 00	0 00	2 00	1 00	3 00	15 18
17.....	1 00	3 00	3 00	1 30	8 30	14 41	0 00	0 00	0 00	0 00	0 00	15 17
18.....	0 00	0 00	0 00	0 00	0 00	14 43	0 00	0 00	0 00	0 00	0 00	15 17
19.....	0 00	0 00	3 00	0 00	3 00	14 45	0 00	0 00	0 00	0 00	0 00	15 17
20.....	0 20	1 00	1 00	0 45	3 05	14 47	0 00	0 00	0 00	2 00	2 00	15 17
21.....	0 00	0 00	0 00	0 00	0 00	14 49	0 00	0 00	3 00	1 30	4 30	15 17
22.....	0 00	0 00	0 00	0 00	0 00	14 51	0 00	2 30	3 00	0 00	5 30	15 17
23.....	1 15	3 00	3 00	2 10	9 25	14 52	3 00	3 00	3 00	3 15	12 15	15 17
24.....	0 00	0 00	0 00	0 00	0 00	14 54	3 00	3 00	3 00	3 15	12 15	15 17
25.....	1 30	3 00	3 00	1 00	8 30	14 56	3 00	3 00	3 00	3 00	12 00	15 16
26.....	0 00	0 00	0 00	1 00	1 00	14 57	3 20	3 00	3 00	3 00	12 20	15 16
27.....	1 30	3 00	2 00	2 00	8 30	14 58	3 15	3 00	3 00	3 00	12 15	15 16
28.....	0 00	2 00	2 00	1 00	5 00	15 00	3 00	3 00	3 00	3 00	12 00	15 15
29.....	0 00	1 30	1 00	0 00	2 30	15 01	3 20	3 00	3 00	3 00	12 00	15 15
30.....	0 00	3 00	2 00	1 00	6 00	15 03	0 00	0 00	3 00	3 00	12 20	15 15
31.....	1 30	3 00	3 00	2 00	9 30	15 04	0 00	0 00	0 00	0 00	0 00	15 15
Total hours.....	16 30	45 30	49 30	28 10	139 40	453 29	46 20	58 00	63 00	53 15	220 35	457 23
Percent of possible.....	12.2	48.9	53.2	21.4	30.8	...	33.5	64.4	70.0	38.5	48.6	...

SUNSHINE RECORD — (Continued).

DATE.	JULY.						AUGUST.					
	Before 9 A. M.	9 to 12.	12 to 3.	After 3 P. M.	Total hours.	Hours, sunrise to sun- set.	Before 9 A. M.	9 to 12.	12 to 3.	After 3 P. M.	Total hours.	Hours, sunrise to sun- set.
	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.
1.....	2 30	2 30	3 00	2 45	10 45	15 13	0 00	0 40	0 00	0 00	0 00	14 26
2.....	0 00	0 00	2 00	0 00	2 00	15 13	0 00	0 00	0 00	0 00	0 00	14 24
3.....	0 00	0 45	1 30	2 00	4 15	15 12	3 30	3 00	0 00	0 00	12 50	14 24
4.....	0 00	0 00	1 00	1 30	4 15	15 11	0 00	0 00	0 00	0 00	7 30	14 20
5.....	1 00	2 00	0 00	0 00	3 00	15 10	0 00	0 00	1 15	2 15	3 30	14 17
6.....	0 00	0 00	0 00	0 00	0 00	15 09	0 00	2 45	3 00	3 30	12 15	14 16
7.....	0 00	0 00	0 00	0 00	0 00	15 08	1 30	2 00	2 00	0 00	5 30	14 13
8.....	0 00	0 00	0 00	0 00	0 00	15 07	0 00	2 00	2 00	0 00	4 00	14 11
9.....	3 00	3 00	3 00	3 00	12 00	15 06	0 00	0 00	0 00	0 00	0 00	14 08
10.....	3 00	3 00	3 00	3 15	12 15	15 05	2 30	3 00	2 45	2 00	10 15	14 06
11.....	3 00	3 00	3 00	2 50	11 50	15 04	3 00	3 00	2 00	0 00	8 00	14 03
12.....	2 45	3 00	3 00	2 00	11 45	15 03	0 00	0 00	1 00	2 30	3 30	14 01
13.....	3 00	3 00	3 00	2 00	11 00	14 59	0 00	3 00	2 00	0 00	3 00	13 59
14.....	3 00	3 00	1 00	0 00	7 00	14 58	3 00	3 00	3 00	0 00	9 00	13 55
15.....	1 30	3 00	3 00	2 00	9 30	14 56	1 00	1 30	2 00	3 00	7 30	13 53
16.....	3 00	3 00	3 00	3 15	12 15	14 55	3 20	3 00	3 00	0 00	9 20	13 50
17.....	2 00	2 00	3 00	1 00	8 00	14 55	3 30	2 30	1 45	0 00	7 45	13 48
18.....	0 00	0 00	0 00	0 00	0 00	14 54	2 00	2 45	0 30	3 15	8 30	13 48
19.....	3 15	3 00	3 00	3 20	12 35	14 52	2 30	3 00	2 00	3 00	10 30	13 45
20.....	3 20	3 00	3 00	3 15	12 15	14 50	3 00	3 00	2 00	2 30	11 30	13 43
21.....	3 00	3 00	3 00	3 10	12 30	14 48	0 00	0 00	0 00	0 00	0 00	13 40
22.....	3 00	3 00	3 00	3 20	12 20	14 46	3 30	3 00	0 00	2 00	11 30	13 39
23.....	0 00	2 00	3 00	2 20	7 20	14 45	0 00	0 00	0 00	0 00	0 00	13 36
24.....	0 00	1 00	0 30	0 30	2 00	14 43	0 00	0 00	0 00	0 00	0 00	13 33
25.....	0 00	2 00	3 00	0 00	8 00	14 41	2 45	3 00	3 00	3 00	11 45	13 30
26.....	1 30	0 30	0 15	3 10	5 25	14 39	2 00	2 00	3 00	2 00	9 00	13 27
27.....	2 50	3 00	3 00	2 00	10 50	14 37	3 45	3 00	3 00	3 15	13 00	13 25
28.....	2 45	3 00	3 00	1 45	10 30	14 35	3 00	3 00	3 00	2 50	11 50	13 22
29.....	2 00	2 00	2 00	2 15	8 15	14 33	2 30	3 00	3 00	0 30	9 00	13 19
30.....	0 00	0 00	0 00	1 00	1 00	14 31	2 30	3 00	2 45	1 30	9 45	13 16
31.....	3 00	3 00	3 00	3 20	12 20	14 28	2 45	3 00	2 30	0 00	8 15	13 13
Total hours.....	58 10	62 45	63 15	56 00	240 10	462 11	51 00	63 30	58 30	41 05	223 45	428 47
Per cent. of possible.....	42.9	67.5	68.0	39.7	52.0	..	51.0	68.3	62.9	38.5	52.1	..

SUNSHINE RECORD — (Continued).

DATE.	SEPTEMBER.						OCTOBER.					
	Before 9 A. M.		9 to 12.		12 to 3.		After 3 P. M.		Total hours.		Hours, sunrise to sun-set.	
	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.
1.....	2 30	3 00	3 00	13 08	2 00	3 00	3 00	3 00	3 00	3 00	11 43	9 45
2.....	2 30	3 00	3 00	13 05	2 00	3 00	3 00	3 00	3 00	3 00	11 40	9 45
3.....	1 45	3 00	3 00	13 02	2 45	3 00	3 00	3 00	3 00	3 00	11 38	9 45
4.....	0 00	0 00	0 00	13 00	0 00	0 00	3 00	2 30	2 30	2 30	11 35	6 30
5.....	0 00	0 00	0 00	12 57	0 00	0 00	0 00	1 45	0 00	0 00	11 32	3 45
6.....	2 00	1 45	0 45	12 54	0 45	0 45	0 00	0 00	0 00	0 00	11 30	3 15
7.....	2 15	3 00	2 30	12 51	0 30	8 15	0 00	0 00	0 00	0 00	11 27	0 00
8.....	1 30	3 00	3 00	12 46	2 00	9 30	0 00	0 00	0 00	0 00	11 24	0 00
9.....	2 00	3 00	3 00	12 43	2 50	9 50	0 00	0 00	3 00	3 00	11 21	8 45
10.....	2 15	3 00	3 00	12 40	1 10	10 25	0 00	0 00	0 00	0 00	11 18	10 30
11.....	2 30	3 00	3 00	12 38	2 15	10 45	0 00	0 00	0 00	0 00	11 15	0 00
12.....	2 15	3 00	3 00	12 35	2 00	10 15	0 00	2 45	3 00	3 00	11 13	11 00
13.....	0 45	1 00	0 00	12 32	0 00	1 45	0 00	2 45	3 00	3 00	11 10	11 00
14.....	0 00	1 30	1 00	12 28	1 30	4 00	0 00	2 32	3 00	3 00	11 07	11 00
15.....	0 00	0 00	0 00	12 26	0 00	0 00	0 00	0 00	0 00	0 00	11 04	0 00
16.....	0 00	0 00	0 00	12 23	0 00	1 30	0 00	0 00	0 00	0 00	11 01	0 00
17.....	1 45	3 00	3 00	12 20	1 45	3 30	0 00	2 23	3 00	3 00	10 58	10 00
18.....	1 10	3 00	3 00	12 17	1 50	9 35	0 00	2 00	3 00	3 00	10 52	10 00
19.....	1 00	3 00	3 00	12 14	1 00	9 00	0 00	2 00	2 30	2 00	10 50	7 30
20.....	2 00	3 00	3 00	12 12	0 00	10 00	0 00	0 00	0 00	0 00	10 47	6 00
21.....	2 45	2 30	2 30	12 09	0 15	9 00	0 00	0 00	2 00	2 00	10 45	6 00
22.....	2 00	3 00	3 00	12 06	0 30	8 30	0 00	0 00	3 00	3 00	10 42	9 30
23.....	2 15	3 00	3 00	12 03	1 45	9 00	0 00	2 30	3 00	3 00	10 37	10 15
24.....	1 10	3 00	3 00	12 01	1 45	9 15	0 00	2 00	3 00	3 00	10 36	10 30
25.....	1 30	3 00	3 00	11 58	1 40	9 40	0 00	2 00	3 00	3 00	10 34	10 45
26.....	1 00	3 00	3 00	11 55	1 30	9 00	0 00	2 00	3 00	3 00	10 32	9 45
27.....	1 30	3 00	3 00	11 51	1 00	8 00	0 00	2 00	3 00	3 00	10 29	10 00
28.....	0 00	0 00	0 00	11 49	0 00	7 00	0 00	2 00	3 00	3 00	10 26	10 10
29.....	2 00	3 00	3 00	11 46	1 50	9 50	0 00	1 00	3 00	3 00	10 24	10 00
30.....	2 00	3 00	3 00	11 43	2 00	10 00	0 00	0 00	3 00	3 00	10 21	1 30
31.....	42 45	69 77.5	66 45	373 38	41 15	230 30	..	..	55 45	58 30	37 50	187 35
Total hours.....	42 45	77.5	66 45	373 38	41 15	230 30	..	..	60.0	62.9	53.0	54.9
Per cent. possible.....	42.7	77.5	74.2	.....	43.6	59.0	..	..	60.0	62.9	53.0	54.9

SUNSHINE RECORD — (Concluded).

DATE.	NOVEMBER.						DECEMBER.					
	Before 9 A. M.	9 to 12.	12 to 3.	After 3 P. M.	Total hours.	Hours, sunrise to sun- set.	Before 9 A. M.	9 to 12.	12 to 3.	After 3 P. M.	Total hours.	Hours, sunrise to sun- set.
1.....	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.	Hrs. m.
2.....	0 45	1 00	0 00	0 00	1 45	10 19	1 20	3 00	3 00	1 00	8 20	9 17
3.....	0 00	0 00	3 00	0 00	4 00	10 16	0 00	2 00	2 00	0 00	4 00	9 16
4.....	0 00	0 00	0 00	0 00	0 00	10 14	0 00	3 00	1 00	0 00	4 00	9 15
5.....	0 00	0 00	1 00	0 00	1 00	10 12	0 00	2 00	2 00	0 00	4 00	9 14
6.....	0 00	0 00	0 00	0 00	0 00	10 10	0 00	1 00	2 00	0 00	3 00	9 13
7.....	1 00	3 00	2 30	0 00	6 30	10 08	1 20	1 00	0 00	0 00	2 20	9 11
8.....	1 30	3 00	3 00	0 30	8 00	10 05	0 00	3 00	1 00	0 00	4 00	9 10
9.....	1 30	3 00	3 00	1 45	9 15	10 02	1 00	3 00	2 45	0 00	5 45	9 10
10.....	1 30	3 00	3 00	1 00	8 00	10 00	0 45	3 00	2 00	0 00	5 45	9 09
11.....	1 30	2 00	0 00	0 00	3 30	9 57	1 15	3 00	3 00	1 00	8 15	9 08
12.....	0 30	1 45	3 00	1 30	6 45	9 55	1 00	1 15	3 00	0 00	4 15	9 07
13.....	0 00	0 00	0 00	0 00	0 00	9 53	1 15	3 00	3 00	1 00	8 15	9 06
14.....	0 00	0 00	0 00	0 00	0 00	9 50	1 30	3 00	3 00	0 45	8 15	9 06
15.....	1 30	0 00	0 00	0 00	5 30	9 48	0 00	0 00	0 00	0 00	0 00	9 06
16.....	0 00	0 00	0 00	0 00	0 00	9 46	0 00	2 00	0 45	0 00	2 45	9 05
17.....	0 00	0 00	0 00	0 00	0 00	9 44	0 00	0 00	0 00	0 00	0 00	9 05
18.....	1 00	2 00	2 30	0 00	5 30	9 39	0 00	0 15	2 00	1 00	3 15	9 05
19.....	2 00	3 00	3 00	0 30	8 30	9 38	0 20	2 00	0 30	0 30	3 20	9 04
20.....	0 00	0 00	0 00	0 00	0 00	9 36	0 45	2 00	0 00	0 00	2 45	9 04
21.....	0 00	0 00	0 00	0 00	0 00	9 34	1 15	3 00	3 00	1 00	8 15	9 04
22.....	0 00	0 00	0 00	0 00	0 00	9 32	1 00	0 00	0 00	0 00	0 00	9 04
23.....	0 00	0 00	0 00	0 00	0 00	9 30	0 00	0 00	0 00	0 00	0 00	9 04
24.....	0 00	0 00	0 00	0 00	0 00	9 29	0 00	0 00	0 00	0 00	0 00	9 05
25.....	0 00	0 00	1 00	0 00	2 00	9 27	0 00	0 00	0 00	0 00	0 00	9 05
26.....	1 30	2 30	0 00	0 00	4 00	9 25	0 00	0 00	0 00	0 00	0 00	9 06
27.....	1 30	3 00	1 30	0 00	6 00	9 24	0 00	3 00	1 00	0 00	4 00	9 06
28.....	0 00	0 00	0 00	0 00	0 00	9 23	0 00	3 00	0 00	0 00	3 00	9 07
29.....	0 00	0 00	0 00	0 00	0 00	9 20	0 00	0 00	0 00	0 00	0 00	9 07
30.....	0 30	0 30	1 00	1 00	3 00	9 19	0 00	0 20	0 30	0 30	1 40	9 08
31.....	..	..	..	..	..	..	1 15	3 00	0 00	0 00	4 45	9 08
Total hours.....	15 45	30 45	28 30	8 15	83 15	293 17	12 00	49 50	36 00	6 45	104 35	283 01
Per cent. of possible	24.5	34.2	31.7	16.6	28.4	.....	23.0	53.6	38.7	14.5	37.0	.....

MONTHLY SUMMARY OF SUNSHINE RECORD, MAY 1, 1885, TO JANUARY 1, 1892.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1885 { Hours .....	.....	.....	.....	.....	165.2	237.5	284.7	163.5	206.7	134.5	53.2	50.0
1885 { Per cent. of possible.....	.....	.....	.....	.....	36.4	52.0	53.8	38.1	55.3	39.3	18.1	17.6
1886 { Hours	43.3	80.0	83.3	144.8	235.8	252.2	243.3	240.2	200.3	142.8	102.0	68.5
1886 { Per cent. of possible.....	14.3	26.7	22.3	38.3	51.9	54.2	52.6	56.0	56.7	41.8	34.8	24.2
1887 { Hours	44.0	61.5	110.7	159.0	265.0	217.8	267.5	235.8	.....	.....	.....	.....
1887 { Per cent. of possible.....	14.5	18.2	29.7	39.9	58.4	47.6	57.9	55.0	.....	.....	.....	.....
1888 { Hours .....	.....	.....	.....	.....	.....	207.2	270.7	200.8	157.1	.....	.....	.....
1888 { Per cent. of possible.....	.....	.....	.....	.....	.....	45.7	58.9	46.8	42.1	.....	.....	.....
1889 { Hours	65.8	84.6	124.4	161.7	185.2	158.6	255.3	234.2	152.0	106.8	65.4	62.3
1889 { Per cent. of possible.....	22.4	28.6	33.6	41.0	40.8	34.7	55.2	54.6	40.7	31.3	22.3	22.0
1890 { Hours	45.2	66.2	97.0	209.2	150.2	230.8	283.7	194.5	157.2	77.6	64.4	34.3
1890 { Per cent. of possible.....	15.4	22.3	24.6	52.1	33.1	50.5	61.4	45.4	42.0	22.7	21.9	12.1
1891 { Hours	77.8	96.8	155.8	150.7	139.7	220.6	240.2	223.7	220.5	187.6	83.2	104.6
1891 { Per cent. of possible.....	26.5	32.7	42.1	33.4	30.8	48.6	52.0	52.1	59.0	54.9	28.4	37.0

1891	JANUARY.			FEBRUARY.			MARCH.			APRIL.			MAY.			JUNE.		
	7 A. M.	12 M.	6 P. M.	7 A. M.	12 M.	6 P. M.	7 A. M.	12 M.	6 P. M.	7 A. M.	12 M.	6 P. M.	7 A. M.	12 M.	6 P. M.	7 A. M.	12 M.	6 P. M.
1	35.7	38.5	38.5	37.0	40.0	37.0	8.0	14.0	10.0	35.0	44.2	44.5	47.0	46.5	39.8	64.5	83.5	80.0
2	40.5	43.8	29.3	20.6	21.0	22.5	5.4	15.5	16.5	39.0	46.0	38.0	43.7	62.5	53.4	64.7	61.4	63.6
3	13.0	13.0	10.5	39.0	37.7	21.0	17.4	26.0	27.0	32.5	36.0	36.0	48.0	50.4	53.0	60.0	65.2	51.0
4	9.5	14.7	13.0	9.1	12.0	8.5	29.0	29.8	21.0	27.0	26.5	27.5	45.0	48.0	41.2	43.6	51.5	51.0
5	16.7	19.0	15.2	10.0	27.2	28.8	16.0	20.5	19.5	25.0	32.2	31.0	32.0	37.0	36.0	49.0	61.0	58.0
6	15.2	15.0	13.0	29.0	40.0	37.0	14.0	26.0	22.0	28.0	36.0	34.5	34.0	43.0	44.0	49.1	63.0	61.2
7	22.2	21.2	18.0	29.0	31.2	32.0	21.0	28.2	28.0	26.8	35.0	35.0	42.0	47.0	47.6	52.0	66.0	67.1
8	13.4	22.3	19.8	29.0	26.0	25.0	26.0	38.4	33.0	28.4	38.0	36.0	47.5	65.0	68.0	50.0	73.0	74.0
9	20.8	24.4	23.0	27.0	32.3	36.0	39.0	39.0	33.6	30.5	45.4	47.0	64.7	77.2	74.0	58.0	78.0	78.0
10	16.0	25.0	25.0	30.4	30.0	26.4	25.5	31.2	35.0	35.5	39.0	41.0	62.5	82.0	77.8	65.5	85.5	84.0
11	34.2	35.0	33.0	16.0	32.0	26.2	34.8	47.5	44.5	42.0	50.5	46.0	49.5	48.2	51.8	73.5	83.2	75.8
12	28.0	25.6	22.2	24.0	35.0	35.0	38.0	40.5	40.3	41.0	44.0	41.0	49.2	63.0	58.8	60.5	72.0	70.3
13	15.4	16.7	16.5	20.0	29.2	25.0	35.0	42.8	33.0	42.8	56.5	60.3	48.0	67.0	61.0	60.7	78.0	76.3
14	28.6	34.0	26.5	13.4	14.8	10.0	22.2	24.5	20.5	50.9	68.0	55.0	48.5	57.0	55.4	65.4	87.6	83.8
15	18.0	28.0	34.0	16.0	33.4	36.0	16.0	25.0	33.0	53.2	58.0	52.2	44.5	69.5	69.0	74.0	91.2	89.3
16	12.0	10.3	6.3	45.2	45.8	39.4	35.0	26.0	20.0	44.2	49.0	50.0	52.0	42.0	42.2	81.0	89.7	75.8
17	24.5	30.3	24.4	34.0	31.0	28.0	10.0	21.5	29.4	39.0	60.0	66.2	39.5	48.0	49.0	65.6	73.7	72.0
18	18.0	20.5	19.8	37.2	32.0	27.0	33.4	50.0	34.0	55.8	67.0	66.0	54.8	55.0	56.2	62.0	64.1	61.1
19	22.7	26.6	26.0	23.8	26.0	27.0	19.0	24.5	25.0	55.5	59.8	56.0	40.8	63.0	68.8	59.0	65.0	66.0
20	31.4	34.3	32.4	26.4	31.0	35.5	33.3	33.0	34.0	46.0	59.5	54.0	58.2	73.0	71.5	65.1	70.1	74.0
21	34.5	38.9	38.0	38.5	43.5	37.0	32.5	40.0	36.0	41.2	62.4	66.0	61.6	71.4	71.1	68.5	72.8	70.0
22	35.0	35.4	34.9	28.5	28.0	23.5	34.5	41.0	38.0	57.8	66.0	71.4	59.1	52.0	52.2	66.4	79.0	72.0
23	31.0	35.4	32.8	19.5	30.5	36.0	37.5	44.0	43.6	61.0	63.0	58.0	43.0	56.0	55.0	67.5	76.8	68.5
24	33.0	37.2	32.6	36.2	46.0	43.5	37.0	45.0	37.8	38.0	46.2	47.2	49.4	62.5	61.0	63.2	71.5	75.2
25	29.5	30.0	27.6	47.4	56.8	43.0	27.0	32.5	28.5	39.2	45.0	45.8	55.4	72.0	69.9	70.8	82.5	82.8
26	30.0	36.0	33.0	28.4	27.0	25.0	23.0	33.0	32.3	42.0	56.5	57.0	45.0	42.1	51.0	76.0	82.2	69.5
27	24.6	34.0	37.8	17.4	21.0	17.0	31.0	38.0	37.4	61.2	75.8	71.2	47.0	57.7	58.5	56.0	63.5	66.0
28	32.5	37.0	33.0	20.3	29.0	21.0	32.0	46.8	42.0	47.0	46.5	39.8	49.0	70.0	63.6	58.0	70.5	71.0
29	35.5	38.7	40.5	.....	.....	.....	35.3	48.0	44.8	37.5	53.5	57.0	52.0	75.8	69.0	66.2	78.0	74.7
30	38.0	36.0	32.8	.....	.....	.....	33.4	48.0	41.0	57.6	76.5	73.5	60.8	68.6	69.0	66.0	80.8	81.8
31	29.2	34.5	36.0	.....	.....	.....	36.0	41.0	34.8	.....	.....	.....	62.0	77.0	73.5	.....	.....	.....

STANDARD AIR THERMOMETER.

JULY.			AUGUST.			SEPTEMBER.			OCTOBER.			NOVEMBER.			DECEMBER.		
7 A. M.	12 M.	6 P. M.	7 A. M.	12 M.	6 P. M.	7 A. M.	12 M.	6 P. M.	7 A. M.	12 M.	6 P. M.	7 A. M.	12 M.	6 P. M.	7 A. M.	12 M.	6 P. M.
97.0	68.2	66.6	58.5	74.1	63.6	61.0	70.7	62.2	46.0	65.8	63.3	41.8	43.0	36.2	19.2	38.0	33.4
63.1	70.0	70.5	59.0	69.0	64.2	59.2	71.0	66.1	55.2	76.4	74.0	28.0	35.5	36.0	37.0	48.0	43.4
64.0	70.3	68.5	58.7	73.8	68.1	58.0	73.2	73.0	62.2	86.0	77.0	30.0	33.0	27.8	41.3	47.2	46.0
56.6	66.5	65.0	61.8	69.5	66.0	64.0	78.0	59.6	65.0	82.6	76.0	29.4	36.2	35.7	52.3	57.2	37.6
58.1	59.4	60.8	64.0	71.0	72.0	60.8	62.7	58.0	58.0	57.0	52.5	33.0	39.0	36.0	40.5	49.5	45.0
58.6	71.8	65.7	63.8	77.0	77.5	64.5	64.0	65.0	46.8	53.9	44.7	30.0	41.0	34.4	32.7	37.0	35.1
55.7	56.2	57.8	65.0	86.0	71.2	58.5	68.0	63.0	43.0	46.8	49.5	25.8	47.7	43.2	40.6	31.5	29.5
54.6	61.4	60.1	70.0	80.8	79.2	50.4	60.2	54.0	49.5	52.7	47.6	38.0	58.2	54.2	27.5	35.7	36.4
58.5	70.6	69.5	69.5	78.3	75.1	51.5	64.0	60.8	38.5	58.7	50.8	47.2	60.8	57.0	40.0	47.6	40.0
60.0	77.1	75.0	69.0	84.0	81.0	52.0	70.1	68.0	42.1	61.5	54.4	47.0	56.0	57.5	33.5	51.2	46.5
65.0	79.9	79.8	73.0	89.5	80.0	54.2	73.7	68.0	45.5	41.8	37.5	49.3	55.2	48.0	38.5	42.3	37.0
66.0	85.2	80.0	70.6	69.8	70.0	57.7	73.5	70.0	30.6	47.0	42.0	45.5	43.2	42.5	37.0	46.0	44.0
69.0	88.0	87.0	62.2	74.1	70.4	62.6	73.0	67.6	32.8	57.0	50.0	34.8	44.7	41.5	43.6	50.6	46.5
74.0	88.4	78.1	63.0	76.7	73.6	54.0	59.9	58.0	38.5	60.4	56.9	34.0	34.5	33.0	45.0	43.1	32.0
72.0	78.8	75.0	63.0	68.7	70.0	51.8	57.8	64.0	48.0	54.1	47.0	30.8	41.5	40.0	33.8	42.0	44.4
63.5	72.0	69.7	59.2	78.8	70.0	55.8	60.4	61.0	44.6	45.9	46.0	45.8	53.5	52.8	33.0	33.0	25.2
64.7	80.5	80.9	63.0	82.4	77.0	58.7	86.5	80.9	36.0	54.4	51.0	57.8	39.0	30.4	10.0	9.2	12.0
67.2	66.0	64.8	67.5	79.0	73.0	76.0	88.0	82.2	46.0	59.3	52.0	21.2	27.2	22.3	15.0	20.0	18.1
63.1	69.4	72.5	64.5	78.0	73.9	61.5	70.0	60.3	43.6	57.3	55.0	22.0	35.5	33.0	20.2	34.0	30.0
61.5	75.0	67.2	66.0	82.2	79.4	53.0	77.1	70.3	46.0	46.0	45.8	34.0	38.5	40.0	27.0	36.3	34.4
61.0	74.0	71.0	72.0	75.6	72.0	64.3	88.5	74.4	46.9	51.1	47.5	41.0	52.4	48.6	28.0	41.2	36.6
64.0	84.0	83.0	64.5	78.8	77.5	62.7	81.0	74.0	38.0	39.0	35.7	48.6	53.7	55.0	40.0	43.0	47.0
73.0	79.8	74.5	63.0	65.2	62.0	63.5	80.8	72.0	33.0	42.0	44.4	53.0	58.1	45.5	42.8	43.2	44.0
68.2	79.4	74.2	63.5	73.0	73.0	64.2	87.3	79.6	38.6	46.0	37.8	40.8	38.5	35.4	37.2	37.6	39.2
61.7	70.2	64.8	61.4	68.0	66.5	66.4	89.0	81.6	28.5	46.0	44.4	31.0	35.0	27.5	43.2	45.2	45.5
57.0	66.5	62.0	59.0	72.4	72.0	62.4	78.6	66.0	49.8	60.0	55.0	24.6	37.0	35.0	47.2	50.0	33.5
66.7	67.8	69.0	66.8	79.0	77.0	58.7	82.2	75.0	35.0	34.2	34.0	33.5	36.5	31.3	24.0	28.0	25.7
60.8	78.0	69.2	67.0	69.0	61.2	68.0	85.2	75.8	31.0	38.4	35.0	27.0	23.0	17.0	21.0	32.0	33.0
60.5	75.7	76.9	53.0	65.5	62.0	70.0	72.7	59.0	32.0	54.0	49.6	14.6	12.0	13.9	34.0	38.0	38.8
63.4	64.0	68.4	54.0	70.0	65.0	47.5	58.0	51.0	43.7	54.4	63.8	16.0	25.4	27.2	31.0	30.0	27.6
55.0	65.0	64.0	61.0	70.0	62.1	.....	.....	.....	49.0	60.4	51.1	.....	.....	.....	15.0	23.5	26.0

READING OF MAXIMUM AND MINIMUM THERMOMETERS AT 7 A. M.

	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	35.7	14.0	38.2	28.5	30.0	6.5	41.0	33.0	65.5	35.5	81.0	55.0	84.8	61.5	70.0	51.0	70.0	58.0	62.8	39.5	68.0	40.5	30.6	15.0
2	41.5	35.0	41.0	19.0	16.0	4.5	45.5	35.0	82.5	38.0	86.2	60.0	71.0	61.5	77.0	56.5	76.0	60.5	71.6	45.0	39.9	27.0	44.7	18.2
3	46.0	12.5	39.8	18.0	17.0	5.0	48.0	31.5	50.6	39.5	69.6	56.5	74.0	58.0	69.4	49.0	78.0	62.0	88.0	61.5	41.0	27.4	50.4	35.5
4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5	17.2	8.5	42.5	8.5	23.0	17.0	42.8	26.0	54.0	25.0	71.0	41.5	77.0	56.0	77.0	58.5	71.0	68.0	89.4	64.5	35.2	26.5	52.8	40.0
6	17.0	8.5	12.6	6.0	30.0	16.0	28.0	23.0	43.0	30.0	68.0	37.0	71.0	56.0	71.0	61.0	74.0	64.0	86.0	57.0	39.2	28.5	57.7	34.5
7	22.5	14.0	34.0	7.0	27.0	13.0	40.0	24.0	40.0	30.0	62.0	40.0	63.0	51.0	73.0	67.0	73.6	68.4	62.0	45.5	39.6	29.0	63.0	32.0
8	19.2	11.5	43.8	27.5	29.5	14.0	43.0	21.0	42.0	33.5	64.5	46.0	72.0	54.0	81.5	56.5	75.5	53.5	56.5	41.5	44.6	25.0	45.0	30.0
9	25.0	12.5	35.0	28.0	32.0	20.0	39.5	26.0	53.0	41.0	69.6	44.0	58.0	50.0	88.5	64.0	71.0	47.5	50.0	42.0	52.2	25.0	42.0	26.0
10	27.0	12.0	38.8	26.6	43.5	24.5	49.8	31.0	80.5	46.5	84.0	54.5	73.0	50.0	81.4	65.0	68.0	43.5	53.4	36.5	60.2	36.7	41.4	26.5
11	34.2	14.0	33.0	14.7	40.8	24.5	43.0	34.0	85.5	48.5	89.0	66.0	79.0	56.0	88.0	67.0	72.5	49.0	61.6	38.0	65.2	45.5	50.2	30.5
12	31.0	11.0	35.5	13.5	57.0	35.0	54.0	39.4	50.5	41.0	87.5	58.0	83.0	60.5	92.0	67.0	75.0	52.5	47.6	27.0	58.1	42.0	44.7	32.0
13	34.0	14.5	31.0	11.0	44.3	34.0	45.0	40.0	64.8	37.0	74.5	49.5	83.0	63.0	78.0	55.0	78.5	57.0	50.1	31.0	48.5	32.5	49.0	36.5
14	28.6	12.4	30.4	12.5	54.2	22.0	61.0	42.0	70.5	43.0	83.0	52.0	92.0	66.5	79.8	58.0	62.5	50.5	52.8	38.0	37.5	29.8	46.0	29.0
15	35.2	17.5	16.4	2.5	30.0	15.0	42.0	49.0	59.5	36.0	91.4	61.5	90.2	69.8	79.8	59.5	64.8	50.5	62.7	38.0	49.5	26.7	49.0	32.5
16	35.0	11.0	45.2	11.5	39.8	15.5	49.5	42.0	74.8	44.0	95.0	64.0	79.8	59.5	79.7	54.0	65.9	52.5	48.8	34.5	58.1	39.0	38.5	8.5
17	24.5	4.0	48.0	33.5	40.8	8.0	50.5	35.0	53.0	31.5	91.5	66.5	83.0	63.0	83.0	63.0	91.0	57.5	60.2	35.4	57.7	19.5	15.2	7.0
18	31.4	17.0	48.2	24.5	36.0	10.0	69.0	39.4	54.8	38.0	78.0	56.5	83.0	63.0	83.0	63.0	90.7	60.0	59.8	40.0	29.6	20.0	28.0	14.0
19	22.7	15.5	41.8	22.0	53.5	18.8	71.0	54.0	58.8	34.5	64.3	57.5	71.4	59.0	79.2	60.0	70.1	45.0	60.3	43.0	40.0	21.0	38.0	19.0
20	31.4	21.5	30.0	23.0	36.0	18.0	61.0	40.5	71.0	40.0	67.0	58.0	76.0	62.0	80.0	65.0	83.4	46.0	47.0	43.0	42.0	33.0	40.0	26.3
21	38.0	23.0	39.5	25.5	37.0	32.5	61.0	34.5	61.5	76.5	84.0	60.0	80.6	62.7	78.8	60.0	93.0	60.0	54.4	37.0	63.9	40.0	44.0	28.0
22	40.0	33.0	43.5	27.2	41.0	32.0	69.8	41.0	75.1	58.2	77.0	65.0	76.5	54.4	78.0	60.0	83.4	60.5	40.9	32.0	57.1	47.5	48.3	39.5
23	36.8	29.5	42.7	18.0	45.0	34.5	79.0	57.0	58.0	36.5	83.4	65.0	82.6	65.0	81.5	62.0	83.4	60.0	47.0	32.4	65.4	35.5	44.0	34.0
24	38.5	29.5	37.0	18.5	47.5	37.0	64.0	37.0	59.0	37.0	79.0	55.0	82.6	65.0	81.5	62.0	83.4	60.0	47.0	32.4	41.9	29.0	43.7	36.0
25	38.3	28.5	50.0	36.0	50.0	26.5	50.0	35.0	63.0	46.0	76.8	62.4	68.0	57.0	77.2	54.0	90.0	63.5	42.4	27.0	41.9	29.0	42.2	36.0
26	31.4	23.5	56.8	27.5	36.0	21.5	48.8	36.5	70.6	44.0	87.0	69.4	68.0	57.0	77.2	53.0	92.8	60.5	42.0	23.0	41.0	23.0	51.0	42.2
27	37.8	24.0	30.0	20.0	30.3	22.5	62.0	41.5	51.3	36.3	83.0	50.0	69.5	49.5	80.0	64.0	81.0	53.0	61.3	34.0	41.0	26.5	54.2	23.0
28	40.3	23.5	21.0	14.0	44.5	29.0	81.4	45.0	63.0	68.0	80.5	50.5	73.0	51.0	81.0	63.0	86.0	58.0	38.2	29.7	41.3	28.0	29.3	19.0
29	37.0	31.5	.....	.....	.....	.....	81.4	32.0	74.7	46.0	85.0	51.4	80.5	51.4	86.5	66.0	86.8	66.0	42.4	29.0	29.0	12.0	35.0	19.7
30	42.0	34.0	.....	.....	.....	.....	60.5	36.5	80.5	54.0	.....	.....	80.8	59.5	69.0	48.5	86.5	43.0	60.3	31.5	17.5	12.5	41.0	30.5
31	38.8	28.0	.....	.....	.....	.....	.....	.....	73.6	51.0	.....	.....	69.8	46.0	71.8	53.5	.....	.....	.....	.....	.....	.....	.....	.....
Aver.	32.4	19.4	37.0	19.5	39.7	21.8	54.2	36.3	63.6	40.3	77.6	55.2	76.5	56.2	78.5	58.4	77.8	54.5	58.3	38.3	46.7	30.0	43.5	27.4

READING OF SOIL THERMOMETERS.

1891.		SURFACE.			ONE INCH.			TWO INCHES.			THREE INCHES.			SIX INCHES.			NINE INCHES.			EIGHTEEN INCH'S.		
		7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.
April 1	33.0	51.0	40.0	38.5	34.6	45.2	40.8	35.0	44.2	41.0	35.0	43.0	41.2	36.5	38.8	41.0	37.0	37.2	39.0	43.5	43.5	43.5
2	38.0	49.0	38.5	37.6	37.6	45.5	39.5	37.8	44.2	40.5	37.8	44.2	40.5	38.7	40.7	41.3	38.4	37.8	40.0	43.7	43.8	43.5
3	36.0	42.0	38.0	34.6	39.3	38.0	35.0	39.0	38.2	38.5	35.0	38.5	38.2	37.0	37.4	38.6	37.0	38.0	38.0	44.0	44.0	43.5
4	32.0	32.0	30.0	33.5	33.0	33.0	32.5	33.0	32.7	35.0	32.0	32.7	35.0	34.6	34.5	35.8	35.6	37.0	38.5	43.5	43.4	43.0
5	30.0	43.0	32.0	32.5	31.3	32.7	35.0	32.0	32.7	35.0	32.0	32.7	35.0	34.6	34.5	35.8	35.6	37.0	38.5	42.5	42.4	42.0
6	34.0	42.0	34.0	32.0	32.5	40.2	38.5	33.0	36.7	40.6	34.5	36.7	40.6	34.5	34.8	40.0	35.0	34.8	37.0	42.0	42.0	42.0
7	32.0	50.0	35.0	33.0	37.6	38.5	35.7	39.0	39.0	39.0	34.5	34.5	39.3	35.5	35.5	38.7	36.0	35.5	37.0	42.4	42.3	42.0
8	31.0	49.0	36.0	32.5	44.0	41.5	38.5	44.0	42.5	42.0	33.2	40.5	42.0	35.4	35.8	40.5	35.8	35.5	38.0	42.4	42.4	42.4
9	30.5	45.4	47.0	34.0	68.0	68.0	44.0	34.5	49.2	45.5	33.0	47.2	45.9	33.5	35.8	40.5	35.7	37.0	38.5	36.3	36.2	39.8
10	36.0	38.2	40.0	38.0	38.0	39.5	38.5	38.5	38.0	39.5	39.0	38.0	39.5	39.7	38.8	39.2	39.0	38.5	38.5	43.4	44.0	43.7
11	42.0	50.0	46.4	40.0	44.5	46.5	43.5	46.4	43.8	42.8	46.0	42.5	42.2	40.8	40.7	43.0	40.4	40.4	40.8	44.6	44.8	45.0
12	40.8	44.0	41.8	40.0	42.5	41.0	40.5	41.2	40.2	42.5	42.2	42.5	42.5	41.0	43.5	58.0	40.4	41.0	44.0	45.0	45.2	45.5
13	45.0	68.0	53.5	40.5	54.5	53.5	50.5	53.2	40.6	49.0	46.0	49.0	52.5	47.7	47.4	51.2	43.8	44.2	47.0	46.8	47.0	47.4
14	49.9	69.0	55.0	45.0	68.0	68.0	55.0	44.7	55.8	55.0	44.8	53.5	54.7	48.7	50.0	50.5	47.0	47.0	48.2	49.7	49.0	49.2
15	54.0	60.0	51.0	51.6	57.0	50.5	56.0	50.0	50.0	54.7	50.0	54.7	52.0	46.8	47.4	48.4	46.3	46.0	46.5	49.7	50.0	49.5
16	48.0	52.2	51.0	46.0	49.5	50.2	46.0	49.0	52.0	46.0	48.7	50.0	56.8	43.8	56.5	51.7	44.5	44.6	47.7	49.5	49.4	49.5
17	44.0	70.8	58.2	41.0	56.0	58.0	58.4	51.0	56.7	58.6	50.6	55.2	57.9	49.4	50.8	53.6	47.8	48.2	50.0	50.3	50.5	50.8
18	54.0	70.0	62.0	51.3	58.4	59.4	51.0	56.7	58.6	56.2	53.7	57.2	56.0	52.5	53.5	54.0	50.3	50.5	51.4	51.8	52.0	52.2
19	55.0	62.0	56.0	53.7	59.2	56.0	53.7	59.4	60.3	57.0	46.0	57.0	56.0	48.4	51.4	56.5	48.8	48.0	52.2	52.6	52.5	52.5
20	50.8	67.0	50.0	45.9	62.0	60.0	45.9	60.3	60.3	57.0	43.3	53.7	59.2	49.0	49.4	54.8	48.3	48.0	51.0	53.0	52.8	52.8
21	47.0	74.0	61.0	43.0	57.4	60.4	46.8	42.5	55.5	60.2	50.5	53.7	63.0	50.7	59.4	57.7	50.0	50.6	53.0	53.3	53.4	53.5
22	55.2	67.0	67.0	51.6	60.4	64.8	51.0	59.0	64.2	50.5	53.7	59.2	63.0	50.7	59.4	57.7	50.0	50.6	53.0	53.3	53.4	53.5
23	58.0	71.5	58.0	58.0	62.6	57.4	56.0	62.2	57.8	55.8	59.7	58.0	58.0	47.0	56.0	56.8	52.8	53.0	54.0	54.2	54.6	54.8
24	42.0	56.0	48.0	42.5	52.5	53.2	42.2	42.2	51.2	51.2	43.8	50.0	53.5	47.0	51.4	51.4	48.2	47.8	49.4	54.2	53.8	53.4
25	56.5	77.0	49.8	45.2	56.7	56.7	46.0	55.0	57.2	47.0	58.6	56.7	58.0	49.8	51.0	55.2	50.5	50.0	52.3	55.0	55.0	54.6
26	46.0	81.5	57.5	41.5	58.0	59.4	41.4	55.5	59.4	58.9	45.0	58.5	58.9	45.0	48.5	54.5	46.4	47.0	50.5	55.0	55.0	54.7
27	58.0	91.0	69.0	51.0	65.8	68.6	50.2	63.0	68.4	49.8	60.8	60.8	67.2	49.5	63.5	60.3	49.0	50.0	54.4	53.5	53.5	53.7
28	49.2	57.3	44.0	49.5	55.5	55.5	50.2	54.5	58.0	50.7	53.8	58.0	58.0	52.5	52.2	52.0	52.3	51.2	51.4	55.0	55.0	54.7
29	45.0	77.0	57.0	47.0	55.7	58.5	53.7	58.5	41.0	52.2	48.5	54.0	58.0	45.0	49.0	54.0	47.0	47.0	50.5	54.0	53.5	53.2
30	60.0	90.0	72.0	49.5	66.0	68.2	48.8	67.5	63.4	61.0	48.5	61.0	66.5	49.0	53.5	59.7	49.0	50.0	54.0	53.8	53.6	54.0

READING OF SOIL THERMOMETERS — (Continued).

1891.	SURFACE.		ONE INCH.		TWO INCHES.		THREE INCHES.		SIX INCHES.		NINE INCHES.		EIGHTEEN INCH'S.	
	7 A.M.	12 M.	7 A.M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	7 A.M.	6 P.M.
	7 A.M.	12 M.	7 A.M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	7 A.M.	6 P.M.
May 1.....	52.0	61.0	45.5	69.5	55.4	52.0	64.0	52.5	58.8	63.8	54.0	54.7	59.5	55.0
2.....	50.0	68.0	49.5	56.6	54.5	46.0	54.6	46.5	56.6	55.6	50.0	52.5	54.5	54.5
3.....	49.0	60.0	48.8	42.0	51.0	48.8	55.2	55.0	54.0	51.0	51.5	51.0	55.7	55.2
4.....	42.5	60.6	43.5	37.0	43.0	42.0	46.0	49.7	49.0	40.5	46.7	48.2	51.0	55.0
5.....	35.0	43.5	40.0	51.4	62.0	63.5	42.5	49.7	38.8	43.2	43.0	43.8	43.7	54.6
6.....	37.2	50.0	44.0	37.5	46.5	46.0	45.7	46.4	40.5	43.2	43.0	43.8	43.7	54.6
7.....	46.0	59.0	49.0	42.0	51.7	50.6	52.0	52.0	49.0	46.6	41.5	43.5	46.0	53.2
8.....	48.7	66.0	63.0	55.3	58.4	45.3	54.0	57.6	52.0	52.0	43.6	46.0	49.5	53.2
9.....	65.0	94.0	70.0	69.0	70.0	62.7	66.5	69.8	62.5	56.6	46.0	48.5	52.0	51.0
10.....	64.0	100.0	75.0	72.0	73.5	52.4	70.0	73.3	64.2	69.0	50.8	55.2	61.6	47.0
11.....	63.0	96.0	67.0	64.5	57.4	55.0	56.2	57.7	55.4	72.2	53.0	58.5	64.5	55.0
12.....	59.4	90.0	61.6	48.2	66.7	65.5	64.2	65.8	47.5	65.7	50.0	54.5	60.5	54.2
13.....	57.0	93.4	65.0	47.5	68.0	67.8	65.7	68.0	47.8	67.0	50.6	55.4	62.2	55.5
14.....	53.0	78.0	60.0	62.5	62.6	42.0	58.4	57.7	60.5	63.0	53.3	55.0	59.4	56.6
15.....	51.3	83.0	69.0	46.5	64.6	65.0	60.7	63.0	47.0	64.4	50.5	53.2	59.7	56.4
16.....	52.0	49.4	46.0	53.0	50.7	49.4	62.5	65.0	53.6	52.2	50.7	53.6	59.7	57.0
17.....	52.2	80.0	53.0	42.5	59.8	42.5	51.5	50.0	42.8	50.7	54.5	53.2	57.4	56.8
18.....	54.0	58.0	57.0	53.7	56.1	53.4	51.5	50.0	50.8	56.7	46.6	52.2	57.4	57.0
19.....	46.0	77.8	65.0	44.4	59.5	52.7	57.5	62.5	45.0	58.0	52.4	52.2	56.5	55.5
20.....	58.5	76.0	71.0	56.0	68.0	67.6	66.0	67.6	54.7	63.8	48.0	50.5	57.0	56.7
21.....	63.5	74.0	59.6	64.2	66.6	59.5	63.2	66.5	64.6	67.0	53.5	57.2	61.7	55.4
22.....	60.3	57.2	56.5	60.4	57.6	56.5	58.0	56.7	58.0	59.0	56.2	56.2	57.5	56.2
23.....	55.5	83.2	60.5	66.0	65.2	46.0	64.0	65.6	47.0	56.8	57.0	56.5	56.7	58.7
24.....	55.5	77.0	65.4	49.9	62.6	49.6	61.0	69.1	49.8	59.3	54.5	52.4	58.2	57.7
25.....	64.6	94.0	73.0	52.4	73.4	70.7	70.4	70.6	52.0	61.9	51.8	54.6	58.9	57.9
26.....	51.4	49.3	53.0	54.0	51.6	55.2	52.5	55.6	53.2	55.4	57.6	55.3	58.0	58.2
27.....	57.0	73.0	69.0	66.6	65.4	45.4	63.8	65.5	46.0	60.0	51.0	51.5	59.3	59.0
28.....	57.0	85.0	65.5	48.4	69.2	67.4	66.4	67.5	43.7	63.5	49.0	56.0	58.0	57.5
29.....	56.0	97.0	71.3	54.0	73.8	70.0	70.1	54.2	68.2	62.2	51.1	53.5	59.1	58.0
30.....	62.6	76.0	69.0	59.9	70.2	69.2	68.6	69.0	67.4	69.8	58.0	58.4	60.7	60.5
31.....	68.0	88.0	74.6	58.5	78.0	75.2	75.0	76.0	63.4	69.0	58.6	59.2	61.3	61.6

READING OF SOIL THERMOMETERS — (Continued).

1891.	SUBFACE.				ONE INCH.				TWO INCHES.				THREE INCHES.				SIX INCHES.				NINE INCHES.				EIGHTEEN INCHES.			
	7 A.M.		6 P.M.		7 A.M.		6 P.M.		7 A.M.		6 P.M.		7 A.M.		6 P.M.		7 A.M.		6 P.M.		7 A.M.		6 P.M.		7 A.M.		6 P.M.	
	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	
June 1	71.2	99.0	79.0	61.2	80.2	78.0	60.7	77.6	77.8	60.8	74.9	77.1	61.0	65.4	70.5	60.4	61.1	64.8	62.5	62.7	63.0	62.7	63.0	62.7	63.0	62.7	63.0	
2	69.4	75.0	69.0	63.8	65.5	67.7	63.5	65.5	67.6	63.6	65.5	67.5	63.7	64.4	65.2	62.4	62.2	62.5	64.0	63.8	63.5	63.7	63.0	62.7	63.0	62.7	63.0	
3	68.0	67.0	69.0	63.7	62.2	61.4	61.4	61.3	63.2	61.3	66.6	63.9	61.2	62.4	64.3	60.7	60.6	62.2	63.5	63.0	62.2	63.5	63.7	63.0	62.7	63.0		
4	90.0	64.0	55.2	51.0	57.3	60.1	51.6	56.2	61.3	62.3	65.6	62.1	55.7	56.0	60.7	57.4	56.5	58.4	63.0	62.7	61.4	61.2	61.2	61.2	61.2	61.2		
5	56.6	75.2	64.2	49.0	68.0	65.0	46.0	66.0	65.4	49.8	64.0	62.4	52.8	57.7	59.3	57.9	54.5	59.4	63.0	61.4	61.4	61.2	61.2	61.2	61.2	61.2		
6	54.0	76.0	63.5	51.3	65.5	64.0	51.4	63.2	64.1	52.0	61.6	64.0	54.3	57.0	61.5	55.3	56.7	58.5	61.6	61.4	61.4	61.5	61.5	61.5	61.5	61.5		
7	58.0	83.5	67.1	53.9	69.5	70.0	54.0	67.4	70.2	54.1	64.7	70.3	55.5	58.5	63.4	56.0	57.4	65.1	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0		
8	56.0	87.0	71.4	52.2	72.7	72.2	52.6	70.2	72.4	52.5	72.6	77.0	58.3	64.1	70.1	51.4	62.2	67.0	62.6	62.8	63.0	63.0	63.0	63.0	63.0	63.0		
9	68.0	94.5	76.0	56.4	77.7	76.7	56.4	75.8	77.1	56.5	72.1	77.0	66.0	73.5	61.4	62.2	67.0	64.0	64.0	64.0	64.0	64.0	64.0	64.0	64.0	64.0		
10	75.0	104.6	82.0	61.5	84.2	81.6	61.0	81.6	81.6	61.2	78.1	81.2	61.7	66.0	69.8	65.7	65.7	68.0	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7		
11	80.8	92.0	77.0	68.5	73.5	76.7	68.3	77.8	78.5	68.0	75.8	77.0	66.0	69.8	72.6	64.7	68.4	66.7	66.6	66.6	66.6	66.6	66.6	66.6	66.6	66.6		
12	66.0	96.0	73.0	62.6	82.4	77.8	63.2	80.1	78.0	63.2	77.9	80.6	63.1	68.0	74.3	63.9	64.0	68.3	67.0	67.8	67.8	67.8	67.8	67.8	67.8	67.8		
13	76.0	99.4	78.0	69.5	83.0	80.0	60.6	81.0	80.5	61.2	77.9	80.6	63.1	68.0	74.3	63.9	64.0	68.3	67.0	67.8	67.8	67.8	67.8	67.8	67.8	67.8		
14	75.0	107.0	84.5	62.5	86.4	83.5	62.4	84.0	83.7	62.7	80.6	83.6	64.2	69.5	76.5	64.4	65.0	70.0	68.5	68.5	68.5	68.5	68.5	68.5	68.5	68.5		
15	84.0	107.0	89.0	68.0	89.0	86.7	67.5	86.6	87.0	67.5	83.5	86.7	67.8	72.5	79.3			71.5	69.5	69.7	70.0	69.7	70.0	69.7	70.0	69.7		
16	90.0	102.0	74.0	71.6	88.0	74.5	68.3	87.2	74.7	70.8	83.4	74.8	70.0	74.5	73.5	69.0	68.8	72.4	70.2	70.3	70.3	70.3	70.2	70.0	69.5	68.9		
17	70.0	81.0	73.0	63.5	75.5	76.0	68.6	66.4	76.2	68.8	73.5	76.0	69.0	70.2	66.5	66.0	63.9	66.0	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6		
18	65.4	67.2	63.5	60.5	66.7	64.0	65.0	66.4	64.7	65.5	66.3	65.0	66.6	66.6	66.5	66.0	63.9	63.8	64.0	63.0	63.0	63.0	62.9	62.7	62.9	62.7		
19	61.0	70.5	67.5	60.5	66.7	66.5	61.0	66.0	66.5	61.4	65.5	65.5	62.8	63.5	65.5	68.7	63.2	63.5	65.5	67.8	67.8	67.8	67.7	67.7	67.7	67.7		
20	63.0	74.0	74.0	63.7	69.0	72.7	63.4	68.2	72.5	63.0	67.6	70.4	70.7	65.7	66.8	68.8	65.0	65.0	66.1	68.0	68.1	68.1	68.1	68.1	68.1	68.1		
21	69.0	76.0	71.0	66.5	72.2	70.5	67.2	71.2	70.5	66.0	70.4	70.7	65.7	66.8	69.0	72.6	65.6	66.0	69.0	68.6	68.8	68.8	68.9	68.9	68.9	68.9		
22	69.0	87.0	76.0	73.5	75.0	67.2	67.1	77.3	75.0	67.2	75.5	74.8	68.8	67.5	69.0	72.2	67.0	67.2	69.2	69.9	69.8	69.8	69.9	69.8	69.8	69.8		
23	73.0	82.0	69.0	66.4	77.4	71.8	66.5	76.8	73.0	67.0	75.2	73.8	67.5	69.0	69.0	72.2	67.0	66.5	68.2	70.0	69.9	69.8	69.8	69.8	69.8	69.8		
24	69.3	82.0	61.0	61.0	76.0	74.5	61.2	74.6	74.6	62.0	73.2	74.8	64.0	67.5	65.2	70.0	75.3	66.0	66.5	70.5	68.7	69.0	70.0	69.7	70.0	69.7		
25	72.5	91.0	82.6	64.4	83.5	81.5	64.3	78.0	81.0	68.7	81.2	80.5	68.9	69.1	66.6	72.7	75.5	68.4	69.1	72.2	71.2	71.3	71.4	71.4	71.4	71.4		
26	78.0	97.0	74.0	69.5	86.5	79.0	68.8	84.3	80.2	68.7	81.2	80.5	68.9	69.2	65.4	68.3	68.0	66.5	69.4	71.6	71.3	71.3	71.0	71.0	71.0	71.0		
27	68.0	83.5	69.0	60.5	78.8	75.0	61.0	77.2	76.6	62.0	74.4	76.3	65.4	68.3	65.4	68.3	73.0	68.0	68.5	68.8	71.6	71.3	71.0	71.0	71.0	71.0		
28	65.4	89.2	72.0	58.6	79.8	76.0	59.5	77.0	76.6	60.0	74.0	76.8	63.5	67.5	68.5	72.5	65.2	65.5	68.8	71.6	71.3	71.0	71.0	71.0	71.0	71.0		
29	73.0	93.3	76.0	61.0	82.0	79.0	61.0	80.1	79.6	61.3	77.0	79.6	63.6	68.4	74.6	65.0	65.5	69.8	70.5	70.2	70.7	70.7	70.7	70.7	70.7	70.7		
30	74.2	98.5	83.0	63.5	83.5	81.7	63.5	82.0	82.0	61.3	75.5	81.8	65.6	70.0	76.0	66.5	67.0	70.9	70.7	70.7	70.7	70.7	70.7	70.7	70.7	70.7		

READING OF SOIL THERMOMETERS — (Continued).

July 1..... 2..... 3..... 4..... 5..... 6..... 7..... 8..... 9..... 10..... 11..... 12..... 13..... 14..... 15..... 16..... 17..... 18..... 19..... 20..... 21..... 22..... 23..... 24..... 25..... 26..... 27..... 28..... 29..... 30..... 31.....	SURFACE.			ONE INCH.			TWO INCHES.			THREE INCHES.			SIX INCHES.			NINE INCHES.			EIGHTEEN INCHES.		
	1891.																				
	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.
1.....	70.0	67.0	70.0	67.6	68.4	68.2	67.5	68.8	68.4	68.4	68.2	68.2	68.4	68.4	68.4	65.0	65.5	69.8	71.4	71.4	71.0
2.....	66.0	78.7	71.2	64.5	71.0	71.1	64.6	70.0	71.2	64.8	68.9	71.1	65.5	70.0	67.6	68.0	67.7	67.8	70.4	70.2	70.0
3.....	66.0	76.0	66.0	62.5	67.4	67.5	62.7	67.5	68.0	63.0	65.8	68.4	68.0	68.5	68.0	65.5	65.5	67.1	70.0	69.8	69.8
4.....	58.0	72.0	63.4	59.1	64.2	64.6	59.7	64.0	65.2	60.3	63.8	66.8	65.5	66.6	69.4	63.8	64.7	65.8	69.2	68.0	68.7
5.....	62.0	64.0	61.4	58.4	60.5	61.0	58.6	61.0	61.3	59.0	61.3	61.6	64.3	65.0	67.6	63.1	63.0	64.4	68.2	68.0	67.7
6.....	64.0	78.8	64.0	55.5	71.2	65.4	56.0	70.0	65.8	56.3	68.8	66.1	58.8	63.1	65.4	60.2	61.0	63.4	67.2	67.0	66.9
7.....	58.7	63.0	60.0	58.0	59.4	59.5	58.3	59.5	59.6	58.7	59.8	59.8	60.4	60.5	60.4	61.0	60.7	60.4	67.0	66.9	66.5
8.....	63.0	77.0	64.5	55.0	68.0	65.5	56.5	67.0	66.1	56.0	65.8	66.8	68.2	61.4	65.0	59.2	59.8	62.5	66.0	66.0	65.9
9.....	63.0	82.0	66.0	57.5	73.3	69.0	58.5	72.6	69.6	58.6	71.0	70.1	59.8	74.3	67.9	60.5	61.5	64.7	66.4	66.4	66.5
10.....	65.0	88.0	71.8	57.5	75.5	74.0	58.0	74.6	74.4	58.2	72.5	74.4	60.5	65.2	70.0	61.8	62.5	66.0	67.4	67.2	67.3
11.....	68.7	87.0	75.3	61.0	77.5	76.8	60.7	76.0	77.1	61.0	73.6	77.0	62.7	66.4	71.8	63.4	63.4	67.4	68.0	68.0	68.2
12.....	68.0	98.0	80.0	62.5	81.0	79.5	63.0	80.3	80.1	63.0	77.4	80.7	64.5	69.2	74.4	65.0	65.8	69.3	69.0	69.0	69.1
13.....	73.3	99.0	83.0	66.4	82.0	81.7	66.5	81.0	82.0	66.3	78.7	81.7	67.2	70.9	76.4	67.0	67.6	71.0	70.1	70.2	70.4
14.....	77.8	99.5	81.0	68.5	82.1	80.0	68.4	81.2	80.5	68.0	79.3	80.8	68.6	72.0	76.7	68.3	68.9	72.1	71.2	71.2	71.4
15.....	72.0	84.0	73.3	68.4	75.0	73.0	68.5	75.3	73.7	68.7	74.8	74.0	69.2	71.1	72.5	68.9	69.0	70.4	71.9	71.9	71.8
16.....	70.0	84.0	70.0	63.8	75.5	72.0	64.4	75.0	73.0	64.7	74.0	73.7	66.5	69.0	72.5	67.0	67.2	70.0	71.6	71.2	71.7
17.....	68.0	95.5	80.0	61.4	78.4	78.2	61.6	78.0	78.6	62.0	75.6	78.7	64.5	68.7	74.0	66.0	66.4	69.9	71.3	71.0	71.0
18.....	69.0	70.6	67.0	62.5	68.8	65.5	67.2	69.0	67.0	67.3	68.8	66.9	67.7	68.3	67.2	67.4	67.1	66.8	71.3	71.0	71.0
19.....	69.0	76.0	70.0	62.5	71.0	71.0	63.0	70.5	70.7	63.4	69.5	71.8	64.8	67.0	69.8	65.2	65.4	67.2	70.1	70.2	70.0
20.....	65.2	88.0	69.0	60.0	75.5	70.5	60.4	73.8	70.9	61.0	72.0	73.7	63.6	67.0	70.0	64.5	64.8	67.4	70.4	70.0	69.9
21.....	66.0	88.0	72.0	60.0	74.4	72.2	60.4	73.4	73.8	61.0	72.0	73.7	63.6	67.0	71.0	64.7	65.2	68.0	70.2	70.0	70.0
22.....	68.0	96.4	78.5	61.4	76.0	76.6	61.6	74.5	76.7	62.0	72.7	76.8	63.8	67.3	72.3	65.0	65.3	68.6	70.3	70.3	71.2
23.....	73.0	94.0	74.0	69.0	74.5	71.6	68.7	73.5	69.8	68.8	72.5	70.8	68.4	69.5	69.2	67.7	67.5	67.1	71.0	70.7	71.0
24.....	70.5	88.0	76.0	67.8	74.6	74.8	67.9	74.6	75.0	68.0	73.6	75.1	68.4	69.5	72.4	67.9	67.8	69.7	71.2	71.4	71.3
25.....	66.0	83.0	68.6	64.2	72.4	70.4	64.7	71.5	70.8	65.0	70.7	71.5	66.7	68.4	70.5	67.0	68.6	68.6	71.4	71.4	71.3
26.....	61.5	67.0	64.3	58.0	66.5	66.4	58.4	65.4	65.4	59.3	64.9	67.7	62.7	62.0	66.1	64.0	64.1	65.0	71.0	70.4	70.0
27.....	58.0	79.7	69.0	56.5	69.2	66.5	57.4	67.9	66.8	58.0	66.7	67.1	61.2	64.0	67.0	62.8	63.1	65.4	69.5	69.2	69.1
28.....	61.4	82.0	68.3	57.5	71.4	68.4	57.8	69.4	68.5	58.4	67.8	68.8	60.9	64.0	67.4	62.4	62.8	65.2	69.0	68.9	68.8
29.....	63.2	88.0	74.0	60.4	73.8	73.8	60.6	71.7	74.0	60.8	69.7	74.2	62.5	65.6	70.2	62.4	63.9	66.8	69.0	69.0	69.0
30.....	64.4	66.0	68.8	64.0	65.4	68.6	64.2	65.5	68.5	64.4	65.4	68.6	65.3	65.3	66.6	65.2	64.9	65.2	69.6	69.6	69.5
31.....	58.0	81.0	65.0	55.9	68.4	68.1	56.5	66.9	69.0	57.3	66.1	69.6	60.8	63.5	67.5	62.5	62.5	65.0	69.2	68.9	68.7

READING OF SOIL THERMOMETERS — (Continued).

1891.	SURFACE.			ONE INCH.			TWO INCHES.			THREE INCHES.			SIX INCHES.			NINE INCHES.			EIGHTEEN INCH'S.		
	7 A.M.		12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	
	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	
August	60.0	73.0	65.4	58.1	67.0	65.8	58.3	65.9	66.0	58.5	65.1	66.2	60.8	62.9	65.5	62.0	62.1	64.0	68.7	68.5	68.2
1.....	63.0	84.0	65.0	61.0	71.6	69.5	61.4	69.7	70.0	61.7	68.8	70.5	62.8	65.4	68.5	63.0	63.5	66.0	68.4	68.5	68.5
2.....	60.2	84.8	68.0	57.5	72.1	69.4	58.0	69.0	69.5	58.5	69.0	70.0	61.3	64.8	68.4	62.7	63.0	66.0	69.0	68.8	68.8
3.....	64.0	74.0	67.6	63.4	70.4	67.1	63.5	59.5	67.2	63.7	69.0	67.5	64.4	65.9	66.6	64.5	64.5	65.4	69.3	69.3	69.2
4.....	66.0	76.0	73.4	68.0	73.5	68.1	68.5	63.1	68.5	73.6	65.2	68.1	73.7	65.3	66.4	70.2	64.8	65.0	67.1	69.8	69.5
5.....	66.0	87.8	74.2	63.6	73.7	75.6	63.7	72.1	73.1	73.1	63.3	71.4	76.4	65.0	67.5	72.4	65.3	65.7	68.8	70.0	70.2
6.....	66.0	89.4	71.0	63.4	73.7	71.1	63.6	72.8	72.8	73.5	69.7	72.0	76.8	67.2	70.4	73.8	67.0	67.8	70.4	71.2	71.4
7.....	71.5	86.0	79.3	67.1	77.4	77.0	66.9	76.7	76.7	76.7	66.8	76.0	73.3	69.8	70.0	71.1	69.0	68.8	72.1	72.2	72.3
8.....	70.0	80.0	74.0	69.5	73.1	73.4	69.6	72.4	73.5	73.5	68.4	76.4	79.9	68.5	71.5	76.0	68.2	68.9	72.1	72.2	72.3
9.....	70.8	92.0	88.0	68.4	78.5	78.8	77.2	79.4	77.2	76.8	70.5	72.9	76.8	70.4	70.5	72.0	70.1	69.8	70.4	73.7	73.6
10.....	73.0	94.5	75.0	70.0	79.9	76.0	70.0	78.2	76.4	72.3	70.1	70.7	72.9	70.4	70.5	70.9	66.9	67.0	69.2	72.9	72.4
11.....	70.8	78.2	69.3	70.0	71.1	71.7	70.0	70.6	72.3	71.0	63.8	70.4	72.0	65.5	68.0	70.9	66.6	66.6	69.0	72.0	71.9
12.....	64.0	87.0	69.2	62.6	72.4	71.8	62.7	70.9	72.4	72.4	63.0	70.3	72.8	65.5	67.5	71.8	67.0	66.9	68.8	72.0	71.9
13.....	64.0	90.3	71.6	62.4	72.2	71.8	62.7	70.9	72.4	72.4	63.0	70.3	72.8	65.5	67.5	71.8	67.0	66.9	68.8	72.0	71.9
14.....	64.6	75.7	69.2	64.4	70.0	72.2	64.6	69.2	69.2	73.2	64.9	69.0	74.0	66.4	67.6	71.1	67.0	66.6	69.0	71.8	71.4
15.....	63.7	96.7	71.0	61.0	74.7	73.5	61.4	73.0	74.0	75.8	63.2	73.0	75.7	65.4	67.7	72.2	66.2	66.7	69.6	71.7	71.6
16.....	64.0	99.0	75.0	63.0	76.4	75.5	62.9	74.5	73.8	73.2	67.0	72.6	73.8	67.7	69.4	71.2	67.5	67.7	69.0	71.8	71.9
17.....	69.0	90.0	71.0	66.7	74.8	72.9	66.8	73.4	73.4	73.3	65.4	73.3	75.3	66.5	68.4	72.7	66.8	69.3	69.9	71.7	71.8
18.....	67.0	90.0	72.0	65.1	75.7	74.5	65.2	73.8	74.8	77.6	64.0	72.8	77.8	65.8	68.5	73.8	66.6	61.8	70.2	71.0	71.8
19.....	66.0	91.0	77.0	63.5	75.8	77.4	63.6	74.0	72.9	72.9	69.9	72.6	72.4	70.0	70.6	71.0	69.2	69.0	69.4	72.3	72.4
20.....	72.0	77.0	72.8	69.8	73.5	72.2	69.9	72.9	72.9	74.3	69.9	72.6	72.4	66.6	69.2	72.5	67.1	67.4	69.8	72.1	72.0
21.....	66.0	90.0	75.0	61.0	76.0	74.6	64.3	74.0	72.7	72.7	64.5	73.0	74.8	66.6	69.2	72.5	67.1	67.0	67.2	72.3	72.2
22.....	65.0	70.0	66.0	66.3	67.5	66.5	66.8	67.1	66.9	67.0	67.2	67.0	67.4	68.2	67.5	67.0	67.0	66.2	67.3	71.4	71.2
23.....	62.0	72.2	73.0	64.7	70.0	71.0	65.0	69.4	70.7	68.7	61.2	66.7	69.0	64.1	65.3	68.4	65.3	65.0	66.6	71.2	71.0
24.....	66.0	78.0	66.0	60.4	68.5	68.2	60.8	67.0	68.7	68.7	61.2	66.7	69.0	62.4	65.7	68.2	63.8	63.9	66.1	70.4	70.3
25.....	62.0	79.5	69.8	58.6	70.0	69.9	59.0	67.8	70.0	70.0	59.5	66.9	70.0	62.4	65.7	68.2	65.8	66.4	68.9	70.4	70.6
26.....	61.5	79.5	69.8	58.0	70.0	69.9	59.0	67.8	70.0	70.0	59.5	66.9	70.0	62.4	65.7	68.2	65.8	66.4	68.9	70.4	70.9
27.....	68.0	89.0	74.7	66.0	75.9	74.5	66.0	74.0	74.6	74.6	65.9	73.0	74.8	66.2	68.7	72.0	65.8	67.3	67.0	71.5	71.4
28.....	66.0	73.0	61.3	65.5	70.6	67.0	66.0	69.0	67.8	66.0	66.0	69.0	68.8	67.4	68.0	69.3	67.0	63.7	66.0	71.0	70.6
29.....	56.8	82.8	63.0	56.0	70.2	66.4	56.8	66.8	67.0	67.0	57.5	66.3	67.7	61.6	63.9	67.7	63.6	66.0	65.6	69.7	69.4
30.....	57.5	84.0	66.0	56.5	71.1	68.4	57.3	67.8	68.7	68.7	57.8	67.2	69.4	61.2	63.3	68.0	63.0	65.6	69.6	69.6	69.3
31.....	62.0	82.0	64.4	60.6	65.6	71.2	65.6	60.8	66.2	66.2	60.9	67.9	66.7	62.8	64.8	67.0	62.8	63.8	65.8	69.6	69.5

READING OF SOIL THERMOMETERS — (Continued).

	SURFACE.			ONE INCH.			TWO INCHES.			THREE INCHES.			SIX INCHES.			NINE INCHES.			EIGHTEEN INCHES.		
	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.	7 A.M.	12 M.	6 P.M.
1891.																					
September 1.....	61.5	77.0	66.2	60.7	71.5	68.9	61.2	69.0	69.4	61.5	68.4	69.8	63.0	65.4	68.6	63.4	63.9	66.2	69.4	69.4	69.3
2.....	60.0	75.5	64.0	59.4	71.7	71.2	59.5	73.0	71.2	59.8	68.6	71.4	62.4	65.0	68.9	63.4	63.6	66.3	69.3	69.5	69.4
3.....	59.0	76.0	66.0	61.8	75.7	64.4	62.0	73.0	65.0	62.4	71.5	65.0	64.0	66.5	70.5	64.3	64.7	66.0	69.7	70.2	70.2
4.....	59.8	77.2	65.0	64.7	64.8	61.2	65.0	65.2	61.8	65.0	65.5	62.0	66.4	65.7	65.8	65.4	65.2	64.0	70.2	70.0	69.7
5.....	61.0	74.0	66.0	65.6	65.6	63.0	64.9	65.9	62.9	64.6	66.0	63.3	63.5	63.9	65.9	63.7	64.5	64.0	69.5	69.3	69.3
6.....	62.0	77.0	62.8	70.2	68.5	64.0	68.8	68.6	63.7	68.0	68.8	64.7	64.0	65.7	67.8	64.3	65.9	64.4	69.3	69.2	69.3
7.....	63.0	78.0	60.5	59.7	73.2	66.6	60.0	70.6	67.4	60.5	69.0	67.9	63.0	65.4	67.7	63.9	64.0	66.0	69.5	69.5	69.3
8.....	56.0	76.0	61.0	56.9	68.0	64.5	57.9	66.0	65.6	58.7	64.9	66.6	61.8	62.9	66.6	63.0	62.8	64.8	69.3	69.2	68.9
9.....	59.0	74.0	60.0	53.6	66.5	65.5	53.8	64.7	66.2	54.6	63.8	66.8	58.4	61.3	65.5	60.5	60.8	63.5	68.4	68.2	67.9
10.....	63.0	92.0	68.0	54.5	72.1	70.0	55.2	69.5	70.3	56.0	68.0	70.2	59.0	62.4	67.6	60.5	60.9	64.4	67.8	67.7	67.5
11.....	58.0	89.5	67.0	56.8	72.5	69.4	57.8	69.8	69.7	58.0	68.6	69.8	60.6	63.5	67.5	61.6	61.9	64.7	67.9	67.8	67.8
12.....	67.0	91.0	69.0	57.8	72.6	70.8	58.4	70.0	71.2	58.9	68.8	71.3	61.2	64.0	68.7	62.0	62.3	65.4	68.0	67.9	67.9
13.....	64.0	73.0	65.4	62.4	70.2	67.7	62.7	68.6	68.2	62.9	68.0	63.6	63.7	64.8	67.1	63.4	63.4	65.0	68.4	68.3	68.2
14.....	55.4	67.0	62.0	56.4	62.7	61.4	57.4	62.3	62.0	57.9	62.3	62.4	60.8	61.9	62.7	62.0	61.8	62.2	68.2	68.0	67.8
15.....	55.0	69.0	62.0	55.8	67.8	60.3	56.8	57.9	60.2	57.1	58.0	60.3	59.1	59.2	60.2	60.3	59.8	60.0	67.1	66.9	66.6
16.....	59.0	67.5	62.0	58.4	63.6	63.8	58.9	62.8	64.2	59.2	62.6	64.4	60.2	61.8	63.6	60.3	60.4	61.8	66.3	66.3	66.4
17.....	59.3	88.0	74.0	57.1	73.5	73.6	57.4	70.5	73.5	57.8	69.2	73.3	59.3	62.8	68.9	60.0	60.7	64.8	66.4	66.4	66.6
18.....	68.0	96.0	78.0	65.7	73.8	76.8	65.6	76.4	76.9	65.5	75.4	76.8	66.0	68.2	72.5	65.8	64.9	68.3	67.8	68.0	68.4
19.....	64.0	100.6	64.0	64.6	77.6	71.4	65.2	74.8	72.2	65.5	74.2	72.6	66.4	68.2	71.4	65.8	65.8	68.3	69.2	69.4	69.3
20.....	58.0	102.0	72.0	56.7	76.0	73.6	57.4	73.0	74.0	57.9	72.3	74.0	61.4	65.4	70.6	63.0	63.2	66.8	69.2	69.0	68.7
21.....	64.0	106.0	75.0	62.5	77.4	74.5	62.9	73.7	74.6	63.0	73.8	74.8	64.2	67.3	71.6	64.3	64.8	68.0	69.0	69.0	69.1
22.....	65.0	105.0	75.0	64.0	78.9	76.2	64.4	76.4	76.4	64.6	75.5	76.6	65.7	68.7	73.3	65.6	66.7	69.4	69.6	69.8	69.8
23.....	65.0	105.8	74.0	64.6	79.0	76.0	65.0	76.4	76.4	65.2	75.8	76.5	66.5	69.4	73.5	66.4	66.7	69.8	70.4	70.4	70.3
24.....	68.0	110.0	78.0	65.0	78.9	77.0	65.4	87.2	77.3	65.5	86.5	77.2	66.8	69.5	74.0	68.5	67.0	70.0	70.8	70.8	70.6
25.....	66.0	101.0	80.0	66.4	79.6	78.0	66.7	77.8	78.4	67.0	77.4	78.6	68.6	70.7	74.8	67.4	67.8	70.8	71.0	71.2	71.2
26.....	64.2	103.0	68.0	66.4	77.5	73.3	67.0	75.9	74.0	67.4	75.6	74.6	68.5	70.2	73.0	68.3	68.0	70.0	71.6	71.6	71.4
27.....	62.0	108.0	74.0	61.7	77.8	75.2	62.0	75.8	75.8	62.5	75.2	76.0	64.9	68.4	73.0	66.8	66.0	69.2	71.2	71.0	70.8
28.....	68.0	103.0	74.0	66.8	78.8	75.4	67.0	77.2	75.8	67.0	76.5	75.9	64.7	70.0	73.4	66.8	67.4	70.0	71.0	71.0	71.0
29.....	70.0	75.6	58.3	67.7	69.5	65.3	67.8	69.0	66.2	68.9	67.8	66.8	67.9	67.8	67.8	67.4	67.0	67.0	71.3	71.1	70.8
30.....	49.0	94.0	56.0	54.0	69.1	64.6	55.0	66.9	65.8	55.9	67.5	66.6	60.3	63.0	66.8	62.4	62.3	65.0	69.9	69.5	69.6

READING OF SOIL THERMOMETERS — (Concluded).

1891.	SURFACE.			ONE INCH.			TWO INCHES.			THREE INCHES.			SIX INCHES.			NINE INCHES.			EIGHTEEN INCH'S			
	7 A.M.		12 M.	7 A.M.		12 M.	7 A.M.		12 M.	7 A.M.		12 M.	7 A.M.		12 M.	7 A.M.		12 M.	7 A.M.		12 M.	6 P.M.
	50.0	88.0	63.0	51.1	66.3	65.7	52.6	64.4	66.2	53.5	64.3	66.5	57.9	60.5	65.2	60.2	59.9	63.0	68.3	67.8	67.4	
October 1.....	56.0	97.0	73.0	56.8	70.2	72.0	57.3	68.3	72.2	57.7	67.5	72.1	59.7	62.6	68.7	60.5	61.0	65.0	67.4	67.3	67.3	
2.....	63.0	109.0	75.0	62.4	78.4	75.6	62.5	76.0	76.0	62.8	75.5	76.0	63.7	67.3	73.2	63.4	64.2	68.0	68.0	68.3	68.4	
3.....	66.0	90.0	75.0	65.7	75.5	73.5	66.0	74.5	73.9	66.1	74.4	74.0	66.4	69.1	71.3	65.8	66.2	68.0	69.2	69.3	69.3	
4.....	61.0	85.0	72.0	64.5	69.6	69.4	65.2	69.5	68.4	65.8	62.8	61.5	67.0	64.7	64.2	66.4	65.1	64.3	69.8	69.8	69.3	
5.....	60.5	80.0	49.0	53.8	62.2	57.0	54.7	60.8	58.4	55.5	61.1	59.5	58.7	59.8	51.6	60.3	60.0	61.3	68.0	67.7	67.2	
6.....	47.0	52.7	48.5	51.0	51.0	51.4	51.8	52.0	52.0	52.8	52.4	52.5	56.3	56.3	54.8	58.0	57.2	56.6	66.3	65.9	65.3	
7.....	49.0	59.8	50.6	50.7	54.2	52.2	51.4	54.3	52.8	51.9	54.5	53.4	54.3	56.0	55.2	55.5	55.5	55.9	64.2	64.0	63.8	
8.....	42.0	71.0	52.0	45.0	58.4	56.0	46.0	57.2	56.7	46.8	57.7	56.8	50.9	54.2	57.3	53.4	53.7	56.3	63.0	62.8	62.6	
9.....	42.0	74.0	54.0	46.0	60.5	57.8	47.0	59.4	58.4	47.6	59.9	58.6	51.5	54.8	58.5	53.7	53.9	56.9	62.4	62.4	62.2	
10.....	49.0	48.0	38.0	50.5	49.0	46.5	51.0	48.5	47.7	51.5	50.2	48.4	53.4	52.6	52.0	54.9	54.0	53.5	62.3	62.0	62.0	
11.....	32.0	68.0	43.0	38.5	52.7	49.5	39.4	50.6	50.6	40.6	51.7	51.0	46.1	49.9	52.6	49.6	49.6	52.3	60.6	60.3	60.0	
12.....	34.0	74.0	48.0	41.3	55.9	53.0	42.5	53.5	54.0	43.0	54.3	54.5	47.2	50.0	54.4	49.6	49.6	52.9	59.4	59.4	59.0	
13.....	38.5	73.5	54.0	42.5	55.8	54.0	43.6	53.8	53.8	44.0	54.8	54.8	48.0	50.5	54.3	50.1	50.3	53.0	59.2	59.1	59.0	
14.....	49.0	67.0	46.0	48.5	56.0	50.9	49.1	54.2	51.9	49.5	54.6	52.9	51.4	52.4	54.3	52.2	52.3	53.8	59.4	59.5	59.5	
15.....	45.0	48.0	47.3	46.1	47.9	48.6	46.7	48.3	49.1	47.0	48.7	49.5	48.4	49.9	50.8	50.9	50.7	51.2	59.3	59.1	59.0	
16.....	37.0	72.0	50.0	42.5	55.5	52.6	43.6	54.0	53.6	44.4	54.8	54.2	49.0	50.8	54.3	49.9	50.2	52.8	58.6	58.5	58.4	
17.....	43.5	72.0	50.0	45.6	55.5	53.0	46.5	54.7	53.8	47.0	55.0	54.2	49.5	51.5	54.3	50.7	50.8	53.0	58.5	58.5	58.5	
18.....	44.0	67.0	54.0	45.4	57.1	54.5	46.0	56.0	55.0	49.4	52.1	54.5	49.4	52.1	54.5	50.7	51.0	53.2	58.5	58.4	58.4	
19.....	48.0	48.0	47.0	49.1	49.0	48.0	49.8	49.4	48.7	51.6	51.0	60.5	51.6	51.0	50.5	52.1	51.5	51.0	59.0	58.9	57.5	
20.....	46.0	55.0	48.0	46.5	51.0	50.0	47.0	50.5	50.5	49.2	49.9	51.5	49.2	49.9	41.5	50.0	50.0	51.1	57.8	57.7	57.7	
21.....	42.3	46.2	36.0	44.7	46.3	42.3	45.4	46.5	43.1	48.5	48.5	47.4	48.5	48.5	47.4	49.4	49.0	49.0	57.5	57.3	57.1	
22.....	36.0	56.5	43.0	39.4	47.2	45.4	40.2	46.2	46.0	44.7	45.8	48.2	44.7	45.8	48.2	46.9	46.8	48.3	56.2	56.0	55.8	
23.....	40.0	61.0	39.4	42.6	49.7	45.2	43.3	48.4	46.5	46.1	47.2	49.0	46.1	47.2	49.0	47.3	47.4	48.0	55.6	55.6	55.5	
24.....	39.0	60.0	45.0	36.5	48.9	47.5	37.8	47.4	48.0	43.2	46.2	48.7	43.2	46.2	48.7	45.8	45.7	48.0	55.2	55.0	55.0	
25.....	46.8	59.0	54.0	46.0	52.5	51.0	46.2	51.6	51.2	46.4	51.6	51.4	47.0	48.8	50.7	47.4	48.0	49.6	54.8	55.0	55.2	
26.....	38.0	39.0	37.0	41.4	40.3	39.4	43.4	42.0	39.6	44.0	43.5	40.9	47.2	45.2	44.4	44.4	44.4	46.5	55.5	55.4	55.1	
27.....	34.0	53.0	37.0	37.0	44.1	42.7	37.9	43.2	43.6	38.5	43.6	43.3	42.2	43.0	44.7	44.5	44.4	46.0	54.2	53.9	53.6	
28.....	33.0	53.0	37.0	36.1	46.6	46.0	37.1	45.5	46.6	37.8	45.8	47.0	44.1	45.3	49.3	45.2	45.7	46.7	53.3	53.1	53.0	
29.....	39.5	58.0	51.0	41.1	50.2	50.3	41.7	49.3	50.4	42.1	49.5	50.8	44.1	46.3	49.3	48.3	48.2	47.7	53.1	53.2	53.3	
30.....	43.4	59.0	49.0	44.1	49.5	50.1	44.6	49.0	50.5	45.0	48.8	50.8	46.2	47.5	50.0	47.0	47.1	48.7	53.9	54.0	54.0	
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